The Veterinary Record.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

NO. 9. FEBRUARY 28, 1931. VOL. 11.

Notes on Canine Tuberculosis.

By Henry Gray, M.R.C.V.S.

Canine tuberculosis generally occurs as a chronic generalised malady and its lesions are often mistaken for new growths such as sarcomata. Frequently bacilli are sparse in the lesions and may be difficult to detect in pleuritic or peritoneal effusions; microscopical examination for their detection often proves negative. Recourse should be had to the biological test before pronouncing against the malady being tuberculosis.

The disease is much more frequent in Great Britain than is generally supposed. It may occur in dogs of all ages, even in puppies suckling their dams. In large kennels it often occurs more or less as an enzoötic. In the larger breeds it often attacks the bones of the limbs. Not infrequently bovine tuberculin or even human tuberculin gives negative results. In France recourse is had to canine tuberculin. The disease is frequently found in the dogs of medical men, nurses, publicans and tuberculous persons. Dogs fed mainly on cow's milk and raw cow's flesh unfit for human food are often attacked with it.

Canine tuberculosis lesions rarely undergo caseation and they are not noted for showing an abundance of bacilli, but rather the opposite—a paucity of them.

Cystic formations are not infrequent in the centre of the lesions, such as those in the bronchial and mediastinal glands and in the liver. In the latter organ the fluid or pultaceous contents are hæmorrhagic and in the former a clear sticky citron-tinted serous fluid.

There is a septicæmic form of the disease which runs a rapid course. Some dogs are very fat when they succumb to certain lesions (such as those in the liver), which break down and give rise to hæmorrhage without the subject previously having given any indication of ill-health. This is very frequently seen also in poultry with tuberculosis of the liver.

There is often an occasional cough, with a free mucous expectoration into the mouth. Even when the lesions are extensive there is cheerfulness—rarely is there any dulness of spirits such as there is in canine distemper, for which sometimes it has been mistaken. When the mediastinal glands are alone involved the cardiac sounds may be heard all over the chest, and the lower part of the chest covered by the cartilages of elongation may fall in and have a vertical instead of a curved attitude. (See fig.) I have seen these glands when cystic reach the size of that of a cocoa-nut.

Tuberculosis may be confined to the testicles, spleen, eyeballs or other parts. As said before, such animals may be very fat and enjoy apparently good health.

In advanced cases the general appearance of the animal is suggestive of the disease. The crotophites often fall in and the head may have a wasted appearance. This appearance may also be seen in disease or injuries of the cranial nerves; therefore it is not characteristic unless other signs are evident. The brain, as well as the ears, may be involved. In some cases of tuberculous meningitis there may be torticollis, leading one to think the neck is dislocated. The stifle joint, especially in large breeds, is frequently involved.

As in distemper, there is no organ or tissue alone or in combination that may not be involved in canine tuberculosis. In the experience of some it is not a rare disease in Great Britain, and its lack of general recognition is no proof that it does not exist. In the experience of the writer it is as frequent here as, if not more than, in Denmark, France, Germany, Austria, Italy or other countries where a great deal of attention has been given to the condition.

Notes on New Drugs in Canine Practice.

Nembutal "844" [sodium ethyl (1-methyl-butyl) barbiturate] has been used on over 500 dogs at the Mayo Institute, U.S.A., as an anæsthetic. It may be injected intravenously, intraperitoneally or intramuscularly. Its greatest drawback is its expense.

. . . . .

Stovarsal (Acetylamino-oxyphenylarsinic acid) 5 c.g. in distilled water 10 c.c., is recommended by French veterinarians as a preventive of nervous complications of canine distemper. It is used as soon as a secondary rise of temperature occurs. It may also be injected in the early stage of the complications, but not with so great a success as a preventive of them. The sodium salt is used for the injections. Some use 0·5 gm. for the first dose, 1 gm. for the second on the third day and 1·5 gm. for the third dose at the end of the week. Stovarsol itself is not soluble in water. This is used in tablet form for oral administration.

H. G.

Protection of Animals Bill.

The memorandum of the Protection of Animals Bill, the text of which was issued on February 17th, states that the Bill is designed to protect those animals which, though nominally wild, are, in fact, kept in captivity or confinement and released for the purpose of being hunted or coursed. The Bill does not apply to any form of sport which is concerned with wild animals in their natural condition of freedom, and does not in any way interfere with the hunting or coursing of such animals. The Bill was presented by Mr. Isaac Foot and was supported by the following Liberal and Labour members:—Mr. Ernest Brown, Mr. Cocks, Mr. Graham-White, Mr. Philip Oliver, Mr. Scott, Mr. Barr, Mr. Birkett, Mr. Freeman, Mr. Leif Jones, Major McKenzie Wood, and Mr. Morris.

DEPT. OF VET. MEDICINE

The Species of *Platynosomum* in Felines.

By G. B. Purvis, F.R.C.V.S., Federated Malay States.

The species of this trematode described from felines are *P. concinnum* (Braun, 1901); *P. fastosum* (Kossack, 1910) and *P. planicipitis* (Cameron, 1928).

Cameron[1] distinguishes them as follows:—

	concinnum.	*fastosum.*	*planicipitis.*
Length	2·7-3·3 mm.	4·59-7·5 mm.	·2·4 mm.
Width	1·6 m.m.	1·5-2·5 mm.	·65 mm.
Shape	Egg-shaped, posterior end round and broad.	Lanceolate with lateral borders parallel some distance.	Lanceolate.
Yolk glands	Fan-shaped	Not fan-shaped; run about 1/5 body length.	Roughly fan-shaped (in figure the longer is less than 1/7 body length).
Ova	41-45 × 23·3μ	34-40 × 21-25μ	32·5 × 21μ average.

I have examined material in Malaya from the livers of 15 cats, from the small intestines of three of them and mixed material from the liver and small intestine of a fourth as well as material from the pancreas of two, comprising in all about eleven to fourteen hundred specimens. All these have not been examined closely, but a large number of specimens have been measured.

Liver Material.

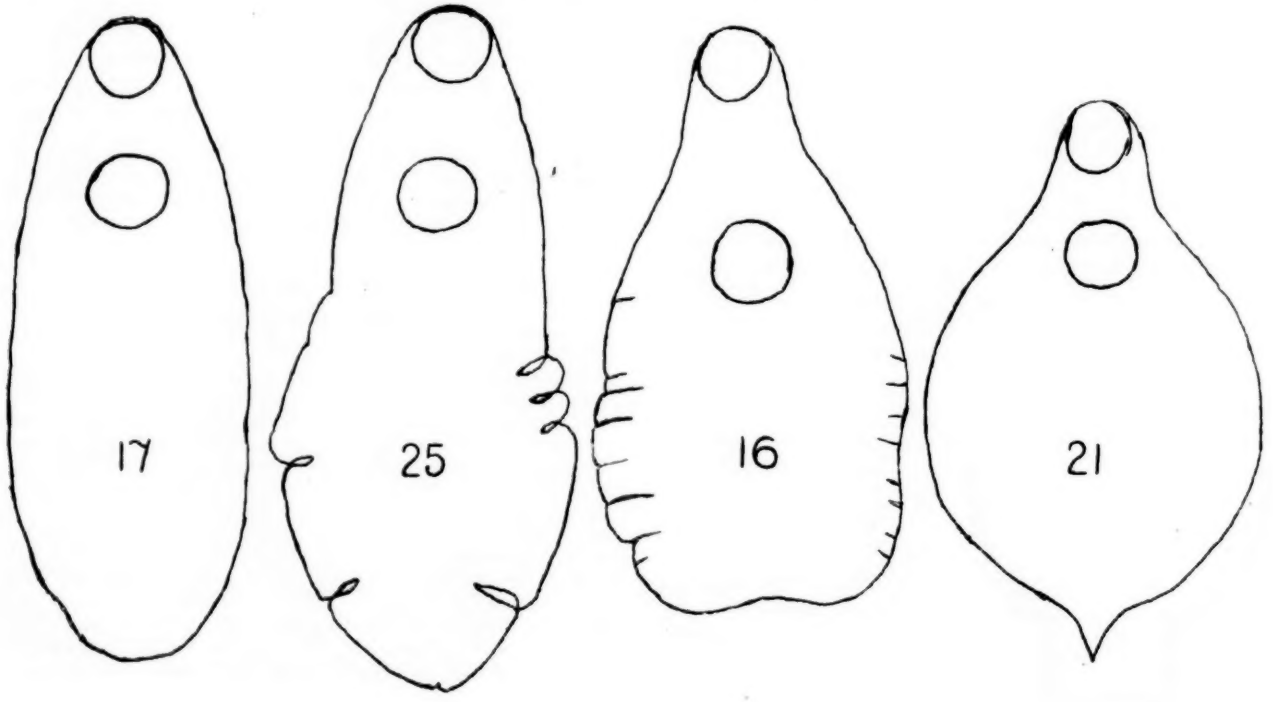
Length and Width.—The smallest specimen I have yet collected measures ·69 mm. long by ·264 mm. wide. The suckers measure: oral 150 and ventral 211μ in diameter. The excretory system and the cæca only could be seen during life. The specimen agreed with the adult form in all details except for the total absence of reproductive organs. From this size up to a specimen with a length of 8·038 mm. I have a continuous series of 42 specimens measured up.

There is no constant ratio between length and width. The fluke exhibits slow expansions which run the length of the body and which may be retained after death, so that of two specimens 2·639 and 2·669 mm. long, one is ·663 and the other 1·538 mm. wide, while other flukes of less width than 1·5 mm. run up to a length of 5·9 mm.

Shape.—I have numerous specimens agreeing with the description of *P. concinnum*. I figure roughly some of my specimens:—Nos. 17, 25, 16 and 21. No. 17 shows *fastosum* shape with the posterior end (contracted longitudinally or) expanded laterally. No. 25 shows an expansion in width of the posterior end. No. 16 shows a further contraction in length, so that the posterior end is invaginated. No. 21 shows an expansion laterally of the median part alone, the two extremities being practically unaffected.

In worms collected from the 15th cat, of 67 liver specimens allowed to die in cold 70 per cent. alcohol, none assumed *concinnum* shape; of 35 liver specimens allowed to die in tap water, none assumed *concinnum* shape; but of 60 liver specimens allowed to die in saline nine assumed *concinnum* shape.

It thus appears that the supposedly characteristic shape



of *P. concinnum* is caused by lateral expansion and can be produced by allowing the parasite to die in physiological saline.

Yolk Glands.—The length of these is inconstant. Usually one is longer, though rarely they are of the same length. In no specimen measured did I get a ratio of length of the longer to the length of the body of more than 1 : 5·8, the average ratio being 1 : 4·76; the ratio of the shorter averaging 1 : 5·48. One specimen gave ratios of 1 : 3·6 and 3·9, but this was quite an exception.

The shape is also quite inconstant. In the contracted specimens they are usually both fan-shaped. Among 31 lanceolate liver specimens both were fans in 11, both were straight in 13, and one was of each shape in the remaining seven.

Size of Ova.—In many flukes, especially the smaller, there are light-coloured smaller ova and larger dark-coloured ones. Resembling the lighter ova are bodies ranging down in size to 21·5μ (and less) and round in appearance. I am inclined to regard all the light-coloured bodies as abnormal ova and have not included them in my measurements. Apart from this, there is much room for error in the fact that many of the large dark ova can be seen to be collapsed after clearing in creosote. However, I have tried to avoid obvious errors and present a few measurements in microns of ova from lanceolate liver specimens :—35·8 by 20·4, 40-44 by 27, 36-41 by 27-31, 47-56 by 30-33, 37·5-41 by 21-26, 36-41 by 23-31, 37·5 by 27, 49-51 by 37·5, 21-35 by 18-29, 41-44 by 27-28, 38-38·5 by 28-31, 35-42 by 28, 25-42 by 26, and 29-36 by 39.

It must also, I think, be accepted that the size of the ova is a quite inconstant character. Cameron seems to recognise this, as he gives an average.

Intestinal Material.

This consists of only eight flukes. Three were spoilt by my leaving them too long in creosote on a previous occasion, but the remainder do not differ from the liver specimens.

Mixed Liver and Intestinal Material.—The 25 specimens are not divisable into forms corresponding to *fastosum* and *planicipitis*. Only one had both yolk glands fan-shaped. In it the ratio of the longer yolk gland was 1 : 6·8, but the ova measured 34-44·3 by 27μ.

Pancreas Material.—This was derived from two cats. From the first I got only immature flukes which agreed with immature cat liver flukes. From the second cat I obtained five mature flukes which are indistinguishable from the cat liver flukes.

Remarks.

Maturity.—It is impossible to say when maturity is reached. A few ova appear when size has reached 1·87 by ·361 mm., but these are confined to behind the ventral sucker and the coils of the uterus, judged from the arrangement of the enclosed ova, are few. With increase of size the ova and convolutions of the uterus increase in number, the ova come to lie below the ventral sucker and later approach the cirrus sac. I have termed specimens mature when the coils of the uterus and the ova are numerous and the ova approach the cirrus sac closely, so that it is reasonable to expect that ova could have been discharged. Taking lanceolate specimens, maturity is reached at an approximate size of 2·3 by ·8 mm. The smallest mature form I have seen measured 2·24 mm. long, the next 2·322 and the next 2·5

Excretory System.—This can only be made out, and then with difficulty, by examining liver flukes in saline. From the posterior terminal and median pore a single straight stem runs forward medially to divide Y-shaped a little posterior to the testes; each branch runs forward internally to the cæca, which are crossed about the level of the ventral sucker to end laterally to the oral sucker at a level depending upon the stage of expansion of the anterior end of the worm. It need hardly be stated that this can most easily be seen in immature specimens where the development of the ova has not yet obscured the view.

Suckers.—In the live fluke, and rarely in the preserved, ridges can be seen running across the oral sucker, giving an appearance like that of the human hard palate. In young flukes, distortion of the suckers is frequent, so that it is often advisable to take the mean of the longitudinal and transverse measurements.

Coils of the uterus anterior to the ventral sucker. The number is inconstant, there may be only one or more.

Summary.

1. The author endeavours to show that *Platynosomum fastosum* and *P. planicipitis* are synonyms of *P. concinnum* (Braun, 1901). Examining Malayan material from the livers of domestic cats, he takes all the characters hitherto used for separation of the species described and shows that they are inconstantly associated, and indeed unreliable for the purpose of classification of this genus.

2. He has found the same fluke in the small intestine and pancreas of the same host. Those from the intestine may not be true parasites of that organ but flukes dislodged from the liver being carried through the alimentary canal. Against this is the fact that no signs of damage due to digestive processes have been seen.

3. Observations are offered on the size at which maturity is reached, and on the anatomy of the excretory system, suckers and uterus.

References.

[1]Cameron, 1928. *Jl. Helminth*, Vol. 2, 87-90.
[2]Ware, 1923. *Jl. Comp. Path. and Ther.*, XXXVI, 33-39.

Sir Walter Gilbey on the Indispensability of the Heavy Horse.

Sir Walter Gilbey, presiding at a luncheon held in conjunction with the fifty-second show of the Shire Horse Society, which took place during the past week at the Agricultural Hall, Islington, said that the fall in the number of entries (216) was anticipated in view of the general depression, but there would be none the less a fair show, for the quality would make up for the diminution in numbers.

The heavy horse, he continued, was as indispensable as ever to the trade and commerce of the country, and he was satisfied that there was every opportunity for the farmer, if he were to be allowed by legislation to exist at all in the future, to make a fair profit on the breeding of heavy horses. That profit was contingent on the right type of horse being selected for breeding. While something might be done to regulate street traffic, he did not think the horse would become non-existent, even under traffic restrictions in London, and the relations between the horse industry and the motor industry were entirely friendly.

Clinical and Case Reports.

Tuberculous Mastitis in a Calf.

By R. H. Smythe, M.R.C.V.S., Camborne, and Captain J. Forbes, M.R.C.V.S., Truro.

Subject.—A ten-months-old cross-bred Guernsey calf, in fair bodily condition.

Lesions.—Our attention was drawn by the owner to the udder, the right half of which was greatly enlarged. The lower portion of the hind quarter was slightly œdematous, the glandular tissue was indurated and devoid of any secretion. A nodule, the size of a walnut, was present on the upper aspect of the muzzle and several smaller skin nodules could be felt on the neck and thorax.

There was no history of injury and, as far as could be ascertained, the teats had not been sucked by another calf. The animal gave a marked reaction to the intradermal and subpalpebral tests. The sire of this calf was destroyed on account of advanced tuberculosis; the dam was untested but apparently healthy.

Post-mortem.—The *post-mortem* examination was conducted by Captain J. Forbes, who furnished the following report:—

The lesions were confined to the right half of the udder and four skin nodules. The internal organs were healthy and I failed to detect lesions in any of the other glands. The right half of the udder was a typical caseous mass of between two and three pounds weight. There was an eggcupful of yellow fluid in the centre. The skin nodules were situated as follows: nose, right thorax, left thorax, back of neck. Each contained a small quantity of whitish, caseous material at the centre.

Prevention of Anaphylaxis in Rinderpest Serum-producing Animals (1928-1930).

By Z. Morcos, M.V.Sc., F.R.C.V.S., D.V.H.,
Professor of Bacteriology, Cairo Veterinary College.

The highest rate of deaths in serum-producing animals was due to anaphylaxis in the process of hyperimmunization (reinforcing) with rinderpest virulent blood (see photo 1).

Cyprus bulls are used for virulent blood production (being very susceptible to cattle plague) and Egyptian bulls for immune serum production (see photos 2 and 3).

The following are extracts from Official Annual Reports of the Veterinary Service.

Annual Report for the Year 1919-1920 (*page* 8).

Anaphylaxis:

"This condition, which caused great losses in the previous serum institute, gave rise to nearly half the deaths recorded . . . It is undoubtedly the most serious condition to be faced in the process of serum production. A total of 21 cases of this disease was met with, out of which 14 died and seven recovered."

Annual Report for the Year 1923-1924 (*page* 24).

Anaphylaxis:

"This condition, which is one of the most serious sources of loss amongst the serum cattle, has shown a great increase. The cases occurred in eight per cent. of the cattle hyperimmunized."

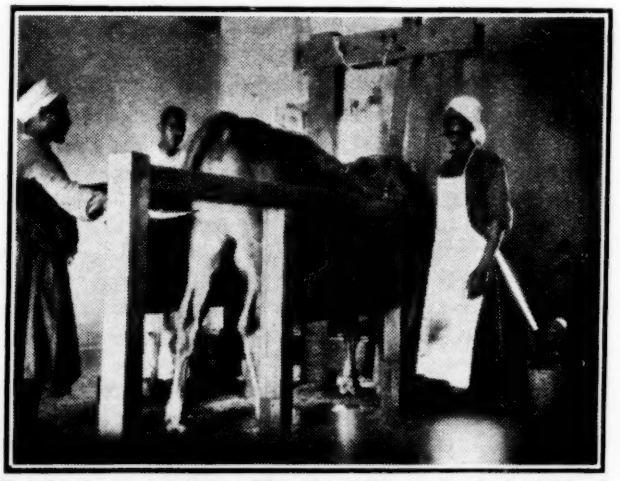
Prevention.

In 1928, I asked the present Director of the Serum Institute, Dr. Guindi Bey, to adopt the following technique before the reinforcement of any animals with virulent rinderpest blood:—

> Mix the virulent blood to be used, scarify the ear of every animal to be reinforced and apply *one* drop of the mixed blood on the scarified area, take the temperature of the animals half an hour after the test and only reinforce those with a temperature under 39° C. Any showing a temperature above 39° C. to be kept back and reinforced with the next batch if they pass the same test.

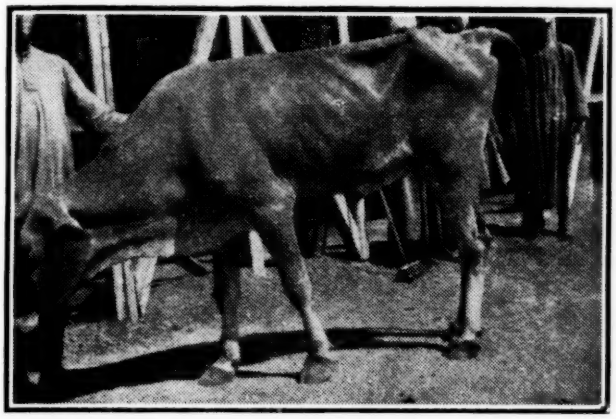
This process was adopted every time before any batch was reinforced, and by this method not one animal has died with anaphylaxis during the past two years, as claimed by the Director of the Institute.

I am highly indebted to Dr. Guindi Bey for applying and adopting the method.



Reinforcing operation. Usually 4 litres of virulent blood are inoculated intra-muscularly or subcutaneously, or by both routes.

A serum-producing bull.



A Cyprus virulent blood-producing bull, 5 days after virulent blood subcutaneous inoculation.

Rinderpest Virus and Laboratory Animals.

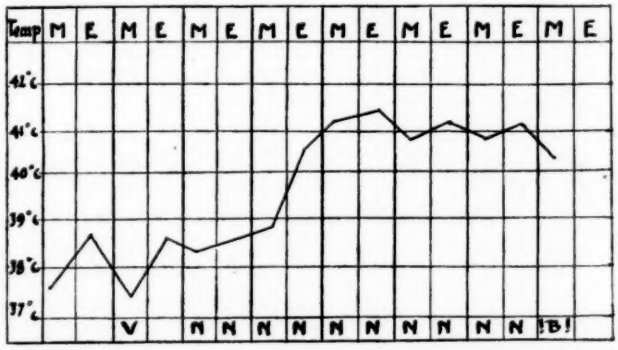
By Z. Morcos, M.V.Sc., F.R.C.V.S., D.V.H.,
Professor of Bacteriology, Cairo Veterinary College.

Virulent material, blood or tissues, was obtained from Cyprus bulls (on account of their great susceptibility to rinderpest virus). Routine adopted: at the height of the disease, seventh day of inoculation, the Cyprus bulls were bled to death for virulent blood production, kept in citrate solution in ice-chests for reference; simultaneous inoculation, and hyperimmunization (*reinforced*) of Egyptian serum-producing cattle.

Before using the produced virulent blood, a test was always carried out by the inoculation of a fresh Cyprus bull, to ensure virulence. (*Control.*)

The following is a temperature chart of rinderpest of one of the Cyprus bulls used in the following experiments:—

Temperature Chart of Cyprus Bull 188.
(*Cattle Plague Chart.*)



V = The animal was inoculated subcutaneously with virulent blood.

N = Negative to Piroplasmosis.

B = Bled to death for virulent blood production.

Laboratory Animals.

Guinea-pigs.—(*a*) Guinea-pigs, fed or inoculated (subcutaneously, intramuscularly, or intraperitoneally), with ½ c.c. virulent blood doses *did not* show any signs of ill-health.

(*b*) Guinea-pigs fed on normal cow's bile, ½ c.c. doses, 24 hours following fed or inoculated with virulent blood, did not show any apparent deviation from normal except in two cases out of 12, when two guinea-pigs died on the 10th and 12th day of intraperitoneal inoculation with virulent blood; their blood was not found infective on inoculation into guinea-pigs.

Controls, fed on normal bile, also separate ones inoculated, intraperitoneally, with virulent blood without previously being fed on normal bile, did not show any apparent signs of ill-health.

All experimental guinea-pigs were kept for two months before disposal.

Rabbits.—Doses used for feeding or inoculation, ½ c.c. Rabbits fed or inoculated 24 hours after 1 c.c., forced feeding with normal cow's bile, did not show any apparent deviation from normal.

Control rabbits fed on 1 c.c. and 3 c.c. normal cow's bile kept in good condition.

Experimental rabbits were kept under observation for two months.

White Rats.—Doses of virulent blood, 0·25 c.c., doses of normal cow's bile ½ c.c. As in rabbits, white rats did not seem to suffer at all with the cattle plague virus; unfortunately, wild rats were not available.

Dogs.—Egyptian cross-bred dogs, selected young, four months to 18 months old, were used.

Dog 1.—On February 28th, 1929, fed on three ounces of the liver of the infected Cyprus bull 188 (bled for virulent blood production on the seventh day of inoculation—see previous chart).

The dog had a slight rise of temperature, 39·3° C. On the fourth day its blood was negative to piroplasma on microscopic examination. On April 10th, 1929, the dog was liberated as it did not show any signs of ill-health.

Dog 2.—On February 28th, 1929, inoculated subcutaneously with 2 c.c. virulent blood of Cyprus bull 188.

On the sixth and seventh days of inoculation, temperature 39·4° C; on the 12th and 13th days of inoculation, temperature 40·2° C. Negative to piroplasma. No more rise of temperature was noticed and the animal did not show any signs of illness; discharged on April 10th, 1928.

Dog 3.—On March 20th, 1929, fed on 3 c.c. normal cow's bile; on 21st (24 hours later) fed on three ounces of the liver of Cyprus bull 195 (rinderpest). On the fifth day of virulent blood feeding, temperature 39·8° C., blood negative to piroplasma.

Dog 3*a* (*Control*).—On March 20th, 1929, fed on 3 c.c. normal cow's bile. Both dogs were kept under observation for three months, after which they were released, showing no symptoms of rinderpest.

Dog 4.—On March 20th, 1929, fed on 3 c.c. normal cow's bile; 24 hours later, inoculated intraperitoneally with 2 c.c. virulent blood from Cyprus bull 195. On seventh day of inoculation, temperature 40·7° C; blood examination negative to piroplasma. Progressive emaciation was noticed, and the dog died on April 11th, 1929 (20 days after inoculation). *Post-mortem* showed gastro-enteritis, nephritis, and hepatitis; other organs looked normal.

Dog 4*a*.—Forcibly fed with 3 c.c. normal cow's bile as dog 4 (control); kept in good condition for two months, after which it was released.

Dog 5.—On April 11th, 1929, inoculated intraperitoneally with 1·5 c.c. blood of dog 4. On the fourth day of inoculation, temperature 39·6° C.; showing progressive emaciation; died on April 22nd, 1929 (after 11 days).

Dog 6.—On April 23rd, 1929, inoculated with 2 c.c. blood of dog 5. The blood was inoculated intraperitoneally. On the seventh day of inoculation, temperature 40·3° C., and on the same day the dog was bled. The dog, showing progressive emaciation, was destroyed on the 10th day of inoculation.

The blood obtained from dog 6 was inoculated into Cyprus bull 243.

Cyprus bull 243, inoculated subcutaneously with 2 c.c. blood of dog 6, was kept under strict isolation and close observation for 14 days, but no signs of disease or any rise of temperature noticed. Three weeks later, the Cyprus bull 243 was inoculated subcutaneously with virulent blood from Cyprus bull 245, but no signs of illness or rise of temperature followed.

Calf 34 (*Control*) was inoculated with virulent blood 245 and contracted cattle plague.

Summary of Experiments.

(1) Under natural conditions, guinea-pigs, rabbits, white rats and dogs do not contract rinderpest on inoculation or feeding of the virus.

(2) Dogs under natural conditions are unlikely to be responsible for carrying rinderpest infection in an outbreak.

(3) Dogs under normal circumstances, with weakness of the gastro-intestinal tract, through feeding them on bile, may contract cattle plague, the virulence of which increases for dogs on passage into a series of dogs.

(4) Cyprus bull 243 was immune, possibly due to one of the following:—

(*a*) May have contracted the disease sometime before the experiment and recovered.

(*b*) May have had a very small or attenuated dose through the passage into dogs, small enough to afford protection but not to infect.

H.M. Stationery Office Publications.

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:— London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

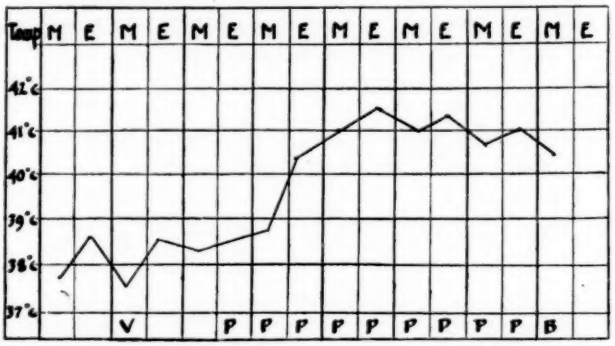
	Price Net.	*Post Free.*
	s. d.	*s. d.*
House of Lords Papers and Bills:—		
44.—Improvement of Live Stock (Licensing of Bulls) Bill. (H.L.) As amended in Committee	0 3	0 3⅜
House of Commons Bills:—		
17.—Live Stock Clubs. To facilitate the provision of live stock clubs for the labouring classes in rural districts ...	0 2	0 2½
42.—Protection of Animals. To extend the operation of the enactments relating to the protection of animals kept in captivity or confinement and released for the purpose of being hunted or coursed	0 1	0 1½
Scientific and Industrial Research Department:—		
Grants to Research Workers and Students, Notes on the. Revised January, 1931. (47-9999.)	0 2	0 2½

Babesia bigemina and Laboratory Animals (1929).

By Z. Morcos, M.V.Sc., F.R.C.V.S., D.V.H.,
Professor of Bacteriology, Cairo Veterinary College.

Virulent rinderpest blood containing, microscopically, *B. bigemina* was used. Blood from Cyprus bulls 229 and 234.

Temperature Chart of Cyprus Bull 229.
Double Infection, Rinderpest and B. bigemina.



V = inoculated subcutaneously with virulent blood.

P = positive. *B. bigemina* on microscopic examination (heavy infection).

B = bled to death for virulent rinderpest blood.

Guinea-pigs, rabbits and *white rats*, inoculated subcutaneously, intramuscularly, or intraperitoneally with ½ c.c. blood of cattle plague, and *B. bigemina*-infected animals did not reveal any parasites on microscopic examination for two months, after which the animals were liberated.

Dogs (Egyptian cross-bred, six to 18 months old) inoculated 1 c.c. doses, subcutaneously, intramuscularly or intraperitoneally; blood from Cyprus bull 229 did not reveal any parasites on microscopic examination and they were released after two months' examination and supervision.

Dogs Nos. 10 *and* 13 each received 5 c.c. blood from Cyprus bull 234 intravenously; *B. bigemina* was seen in abundant numbers on the fourth day of inoculations; disappeared on the 10th day. The dogs were liberated two months after inoculation.

Conclusion.—*B. bigemina* does not live or multiply in guinea-pigs, rabbits, white rats or dogs; specific for cattle.

Guinea-pigs, rabbits, white rats and dogs do not contract rinderpest on inoculation with virulent blood.

For selling beef sausages and minced beef containing sulphur dioxide, contrary to the Food and Drugs Act, a Southall trader was fined £10 and ordered to pay two guineas costs. His manager was fined £5 and one guinea costs for mixing the sulphur dioxide with the minced beef.

At the annual conference of the National Association of Young Farmers' Clubs, it was stated that there were now 108 clubs actively at work in different parts of the country with a membership of 2,500.

Public Health Reports.

Ministry of Health Report on Psittacosis.

[Report on Public Health and Medical Subjects, No. 61. A Disease of Parrots communicable to Man (Psittacosis). By E. L. Sturdee, O.B.E., M.R.C.S., and W. M. Scott, M.D. (Medical Officers of the Ministry of Health). Published by His Majesty's Stationery Office, 1930. Price 2s. 6d. net.]

The report is in two parts. Part I commences with a review of the articles on Psittacosis which have been published since 1879 and then discusses the disease under the headings of epidemiology, clinical aspects, pathology and administrative action. Part 2 gives an account of experimental work performed and of studies of the virus. There are six appendices, the most interesting of which, to the veterinary surgeon, is "Suggestions for the Transport and Keeping of Birds, reprinted from the Proceedings of the Zoological Society of London, 1928, Part II."

Following an epidemic in Paris in 1892, and the bacteriological discoveries of Nocard, it appeared that the ætiology of psittacosis was provisionally established on a sound basis, and the acquisition of the disease from sick parrots accepted as fact. Nevertheless, subsequent French observers could not obtain consistent serological results, and an element of doubt again crept in. This was strengthened by the sceptical attitude of subsequent workers, but no further light was thrown on the matter in succeeding years, and it is natural that the 1929-30 outbreak was approached by modern observers with an open mind and a justifiable scepticism. The present report indicates that all lines of investigation (epidemiological, clinical, pathological and bacteriological) tend to converge in the same direction, namely, to the abandonment of the classical, but erroneous, hypothesis of a Salmonella infection, and to the high probability of the ætiology of psittacosis being due to an infection with a filtrable virus, the biological properties of which must engage the attention of future workers.

In view of the great popularity of the keeping of parrots as pets, it may not be out of place to describe briefly the symptoms of psittacosis, both in birds and human beings. The infected bird becomes listless, the plumage is rough and dirty, the bird suffers from diarrhœa (frequently containing blood), and there is usually a discharge from the eyes and nose; but these symptoms are not specific in themselves, being merely those of gastro-enteritis with accompanying pneumonia in many instances.

Post-mortem, the picture presented is not a striking one. The abdominal viscera generally and the intestines in particular are congested. The duodenum may show these changes when the rest of the intestinal tract escapes and we have been struck by the peculiarly distended and swollen appearance presented almost constantly by this portion of the upper gut. The spleen is usually enlarged and the colour of the liver suggests fatty change. Peritonitis may be present and both Levinthal (1930[1]) and Elkeles (1930[1]) speak of finding pericarditis and varying degrees of pneumonic consolidation in parrots dying of psittacosis, but in the birds examined by us we have failed to note any macroscopic evidence of either of these conditions. Levinthal (1930[1]) makes mention of a necrosis of muscle which occurs in the pectorals at the site of inoculation when this route is employed.

It is, of course, well known that animals suffer from certain diseases which may spread to man, such as tuberculosis, actinomycosis, rabies, and that in this way the cow, horse, sheep, dog, pig and the rabbit bear a relationship to disease of man. In some of the cases recorded in the present Report, the intimacy of association of man and "beast" was unwholesome and in violation of those elementary principles of hygiene which govern the safe association of man with animals; pet birds should be treated as birds and not as babies. That a human patient can directly infect another is established. Yet the large majority of human cases of psittacosis reported in this country and abroad have been associated with parrots, usually with Brazilian parrots, but grey African parrots have been the apparent cause of infection in some instances. The infectivity would not appear, however, to be limited to the living bird; it may be conveyed from the corpse of a bird which has died from the disease, and probably also by the fouling of inanimate objects, by feathers, excreta, etc.; but, as the authors remark, this evidence cannot be accepted unreservedly.

As a general rule human cases have been caused by newly-imported birds, but this has not always been so. Imported birds may be apparently well or may be suffering from a slight malaise for varying periods up to ten months after importation and then suddenly develop an acute attack of the disease without having been exposed to infection, and, during this attack, infect human beings.

The length of time during which a parrot may remain in a sub-acute infectious condition is of epidemiological as well as of administrative interest, but in the present state of knowledge it is difficult, if not impossible, to say for how long a newly-imported parrot may be a potential source of danger. It is not stated how long recovered birds remain infective.

A considerable number of cases are recorded in which infection could have been contracted only from a case of the disease in man. Probably the likelihood of human transference of psittacosis is much less than in the enteric group of diseases and, with ordinary care, should not usually occur. Infection is probably by ingestion, though infection by inhalation from pulmonary patients cannot be discounted.

In man, psittacosis is a severe illness with a high mortality (in a certain limited number of cases the observed mortality was 20 per cent.). The incubation period would appear to vary from eight to 14 days, but is usually about ten days; it may even be as long as 21 days, though there is little direct evidence in support of this longer period. The disease affects all ages and both sexes; it lasts from two to three weeks, but in a few cases the symptoms continue with maintained pyrexia for as long as eight weeks. Convalescence is nearly always protracted and tedious, and may be interrupted by temporary relapses. During the first few days, or even throughout the first week, the patient may be comparatively well in spite of high fever; subsequently a pyrexia of unknown origin may then present itself, with few or no definite physical signs, and gives no undue cause for anxiety to the medical attendant. Towards the latter part of the first week, however, the whole aspect of the disease becomes more severe, and the patient suffers from profound exhaustion

and tends to become both somnolent and intermittently irritable, with headache, insomnia and a troublesome cough. Signs in the lungs begin to appear, developing later into patchy areas of consolidation. During the second week the patient may become semi-comatose, often completely oblivious to all his surroundings, muttering delirium may alternate with periods of restlessness and violent excitement. At this stage his life is often despaired of, but often when things seem at their worst the temperature may begin to fall, and in a few days the patient gradually show signs of improvement. It is still another week before he appears to be out of danger. Although the illness is usually of the above severity, mild and even ambulatory cases occur.

A disease of this nature certainly calls for anxious and patient investigation, and the results so far achieved by the English workers are extremely timely, especially as the opportunity for a consideration of the problems involved is happily but a rare occurrence. The stage of the investigations so far reached by the London Hospital workers is epitomised by them in the following five conclusions :—

1.—Evidence has been produced showing that the causal agent of psittacosis is a filtrable virus.

2.—This virus is apparently not susceptible of cultivation by the methods in current use in bacteriology.

3.—It is associated constantly with the presence of a minute cocco-bacillary body which stains with difficulty. The relationship of this with the other virus bodies, the Rickettsia and the Brucella group is discussed.

4.—Some preliminary experiments suggest that the serum of convalescents gives fixation of complement in the presence of a specific antigen.

5.—The possibility of producing an active immunity by means of a formalised vaccine is considered.

The report is very full and interesting and should be studied in its entirety by those interested in the disease.

G. A.

Report of the County Medical Officer of Health for Dumfriesshire.

The thirty-ninth Annual Report of the Medical Officer of the County of Dumfries contains details of the work carried out by the County Veterinary Inspectors in connection with milk and dairies. An appendix of the Report gives statistical results in connection with the work done.

The report of the veterinary inspectors shows the value of a well-organised county veterinary department, and contains much useful information for those engaged in public health work. It seems regrettable, therefore, that the report on the work of this veterinary department should have been included in the medical officer's report, and not issued as a separate report by the officers concerned, and extended to show the full work of the department done, not only in connection with milk and dairies, but also in connection with the Diseases of Animals Acts generally.

The statistics given in regard to bovine tuberculosis are particularly interesting. Out of a total of 170 confirmed cases of tuberculosis dealt with during 1929, approximately 50 per cent. were detected by the veterinary inspectors. During the same period, 70 cases of tuberculosis of the udder were dealt with as compared with 24 in the previous year. These results prove most conclusively the value of periodic and thorough clinical examination of dairy herds, not only in eliminating tuberculosis from the herds, but also in protecting the milk consumer from tubercle infection.

Another interesting feature of the report is the table showing the results of the *post-mortem* examinations of cases slaughtered under the Tuberculosis Order. Out of 170 cases slaughtered, 90 were "not advanced" and 80 "advanced." This preponderance of "non-advanced" cases is no doubt due to increased herd inspections, and also to the fact that owners in this district are realising the value of reporting suspected cases early. In this way, much unnecessary spread of the disease can be avoided.

No statistics, however, are available as to the amount of compensation payable under the Order in respect of the 170 cases slaughtered, and no figures are given as to the average valuation and the amount of salvage recovered by the local authority. The addition of these particulars would have been of interest in considering the report as a whole.

Particulars are also given regarding the operation of the Milk (Special Designations) Order in the county. There are 11 licensed and three unlicensed tubercle-free herds in the county. Suggestions are made in the report as to the alteration of the Regulations governing the issue of licences for the sale of designated milk. The deletion of Grade "A" as a separate designation is advocated. It is suggested that there should only be two grades of designated milk, *viz.*, "Grade A Tuberculin-Tested," and "Pasteurised," the remainder to be undesignated and sold as "Milk."

The report can be commended to all interested in the public health service.

R. S.

The Bull Licensing Bill.

There is, of course, now no doubt about the Live Stock (Licensing of Bulls) Bill duly becoming law, but the disappointing feature of the situation is that it is not to become operative for two years. Scottish pedigree cattle breeders have been whole-heartedly in favour of such legislation for years, but Englishmen, on the other hand, have disclosed a caution which one would have more naturally looked for from the men north of the Tweed. The English attitude is quite explainable in the anxiety lest the new legislation should mean the elimination of many first-rate dairy bulls which might not be registered. The two years' interval before the Bill becomes operative will afford time for adjusting this difficulty, although it may be emphasised that those pedigree breeders strongly demanding legislative action did not for a moment contemplate any precipitate action which would unfairly handicap the activities of dairymen in this respect. It has been further plainly stated by the Ministry of Agriculture that they would welcome, in the two years' interval, any effective efforts on the part of pedigree breeders to initiate voluntary action in terms of the Bill. Such preliminary voluntary schemes as may be agreed upon would be useful in paving the way for the ultimate operation of the Bill, and the Ministry of Agriculture will be prepared to place their officials at the disposal of any responsible bodies in carrying out such voluntary schemes. Even voluntary schemes would have valuable possibilities, apart from the fact that it would make the ultimate working of the Act all the more likely to succeed smoothly.—*North British Agriculturist.*

Eleventh International Veterinary Congress, London.

August, 1930.

(*Continued from page* 215.)

Bovine Sterility (Prophylaxis and Treatment).

The Graphic Representation of the Movements of the Uterus—Normal, and Strengthened or Weakened by Drugs—in Living Bovines During the Period of Involution.

By Professor Dr. Franz Benesch,
Director of the Obstetrical Clinique of the Veterinary High School, Vienna.

After giving a short account of the work carried out by other investigators—Servatius (1909), de Bruin (1903), van der Kaay, and others—the author describes in great detail a series of experiments carried out by him together with Steinmetzer during 1929. The inflated rubber chamber of a football was introduced into the uterus, and the rubber tube attached to it was joined up to the Basch's manometer; the uterine movements during the puerperal period were recorded by means of a kymograph on the Marey's drum. Seventy-five experiments on 41 cows, their ages ranging from 4-12 years, were carried out either immediately after delivery or within 5-14 days *post-partum*. After describing the actual technique employed, an account is given of the results obtained.

The uterus—immediately after delivery, and up to the end of the first day—showed a series of contractions following each other in rapid succession, and each lasting from 80 to 120 seconds; in the space of 30 minutes 8-9 contractions usually occurred, the aim of these energetic movements being evidently the rapid expulsion of the after-birth. Once this has been effected, uterine contractions decrease in force and become less frequent; within the second period of 24 hours after parturition, the intervals between contractions become irregular and last for 8-12 minutes, and there is a distinct decrease in their strength; within 48-60 hours after delivery there is a complete disappearance of rythmical movements, and in from 60-80 hours only a slight sensitiveness of the uterus could be detected. From this time onwards up to the eighth day, the only movements discernible were irregular undulations of the uterine horns. The curve from now on assumes the aspect of a straight line.

The action of various drugs and extracts—*Secale cornutum* in different forms, quinine and its derivatives, pituitary gland preparations, etc.—is described in great detail. The drugs were administered *per os*, subcutaneously or intravenously, in combination with epidural anæsthesia or without it.

Of the ecbolics known to-day, pituitary products are by far the most important from the point of view of the practitioner. The effect of the pituitary extracts—which no other known drug with an alleged specific action can achieve—depends on the stage of involution and the manner in which it is administered. It manifests itself either in the acceleration and the increase in the strength of uterine contractions, which may last for several hours, or in the rise of the internal tonus of the uterine musculature. A dose of 10 c.c. is usually sufficient for the production of the desired therapeutic effect. It is recommended to administer the drug subcutaneously or epidurally between the first and the fifth day *post-partum*; after that it must be given intravenously. Epidural method of administration must be preferred to the subcutaneous or intravenous injection, for the effect thus obtained lasts longer and the rhythmical character of contractions becomes more pronounced. By the combination of epidural and subcutaneous injections a perceptible lengthening of its effect is achieved. Although it was not possible to shorten the time of normal expulsion of the fœtal membranes by means of parenteral administration of pituitary products, there can be no doubt that in cases of *retentio secundinarum* recovery is aided in a very marked manner by the use of these drugs if associated with the ordinary local treatment. The clinical observation that spontaneous contractions of the uterus are not inhibited by the epidural anæsthesia has been confirmed. The uterus is autochtonous to the extent that, under deep epidural anæsthesia, a normal increase in the strength of uterine contractions can be induced after an epidural injection of pituitary extracts.

All other known ecbolics, and especially quinine, *secale cornutum, extractum hydrastis canadensis*, etc., produce a far inferior effect on the bovine uterus during the involution period. Quinine given by the mouth, subcutaneously or epidurally during the first two days *post-partum*, produced an effect far inferior to that obtained after the use of pituitary extracts.

Ergot and its compounds, which are generally considered as specific drugs for the human subject in the puerperal period, were found to possess very little action or none at all in cattle during the *post-partum* period when administered subcutaneously or epidurally. Their use, therefore, during the stage of involution or as labour-inducing agents in the retention of after-birth, should be abandoned.

H. F.

Sterility: Its Prophylaxis and Treatment.

By R. L. Conklin, D.V.M., M.SC.
Assistant Professor of Animal Pathology, Veterinary Department, Macdonald College, Ste. Anne de Bellevue, Quebec, Canada.

The author considers sterility in the male and female and discusses the ætiology from various standpoints, thereby giving the clues for the prophylactic and curative measures to be adopted in combating the condition, and in the course of his paper he enumerates the steps to be taken in these respects, according to the nature of the disease.

The paper may be summarised under the following headings:—

I.—Etiology.

comprising:—(1) *Mineral deficiency*.
(2) *Vitamin deficiency*.
(3) *Prolonged housing* under unsatisfactory conditions.
(4) *Inbreeding*, which leads to aberration of the Muellerian ducts and other congenital defects, including hermaphrodism.

(5) *Disease of the endocrine organs.*
(6) *Infection of the genital tract.*

II.—Necessity or Value of Breeding Records.

Records should include (*a*) the duration of pregnancy; (*b*) the numbers of pregnancies; (*c*) the result of the pregnancies; (*d*) the number of services required for conception; (*e*) the duration of gestation; (*f*) whether the placenta was retained or not; (*g*) the character of uterine exudate or discharge; (*h*) the health of the calf at birth and for the first few days; (*i*) illness experienced by the animal; (*j*) information as to whether the female was born following a long period of sterility of the dam.

The foregoing points have an important bearing on the breeding career of the animal in question, as alluded to in the following paragraphs:—

III.—Duration of Gestation.

(1) That of a female is approximately the same as that of its dam.

(2) A diseased sire affects the duration of pregnancy.

(3) A period less than 265 days generally indicates trouble.

(4) A shortened period may result in a sterile female.

(5) Prolonged periods were known to follow sires which were eventually found to be suffering from some chronic inflammatory condition of some part of the genitalia and the females born of such gestations were predisposed to sterility.

(6) When there is clinical evidence of disease in the sire, the calves born of long gestation periods are very susceptible to disease.

IV.—Placental Examination.

This affords evidence of the presence or absence of infection.

Females delivered from an infected uterus are apt to prove sterile, and if conception does occur, an unusual number of services are required to bring it about.

V.—The Health of the Calf.

Cases are recorded showing that when calves suffer from disease during calfhood they are likely to prove sterile on reaching the breeding age.

VI.—Heavy Lactation and Deficient Diet.

Faulty diets, combined with increased lactation, often contribute to infertility.

VII.—Hereditary Influences.

In herds studied certain families exhibited sterility throughout each generation until the family was eventually eliminated, while other families in the same herds, exposed to identical conditions, did not show a tendency to sterility among the progeny. Sires from families showing a predisposition to sterility were of low productive power.

Conditions Inhibiting Fertility in the Adult Female.

These comprise: (1) *Granular vaginitis*, which may spread to the cervix. It may be conveyed by the bull.
(2) Abnormal development of the genital organs, as persistent hymen.
(3) Abnormal fœtal fluids indicating an infected state of the endometrium.
(4) Ovarian diseases.

Conditions of the Male.

The male is susceptible to all the diseases which infect the female prenatally, and in calfhood micro-seminal examination as to the head length measurement of the sperms may reveal indication of disease before it is clinically apparent.

The male is affected by sanitation, hereditary predisposition, feeding and sexual overloading and may convey infection to the female.

Treatment of Sterility.

Preventative and curative treatment have obviously to do with removal of the causes of sterility.

Treatment of inflammatory conditions in the male has not proved very successful. Details worthy of mention are:—

(1) The administration of glandular extracts, to promote œstrum.

(2) Transplantation of entire ovaries for the same purpose.

(3) Pituitary extract injected hypodermically periodically, for thickened uterine walls in aged subjects, associated with cessation of œstrum, but not accompanied by infection.

(4) Extracts of the endometrium and of the placenta have also been used. The results of treatment under three and four have not been stated, except to say that in a few cases they were encouraging.

(5) Irrigation for metritis with Lugol's solution or solution of Mercurochrome.

(6) The use of pessaries of carbon and iodoform inserted into the cervix after irrigation.

(7) The use of Rubins' apparatus to ascertain the potency of the Fallopian tubes, and opening of the latter by the introduction of gas.

(8) The introduction of BIPP into the uterus after irrigation; and

(9) Dislodgment of persistent corpora lutea.

J. J. O'C.

Prophylaxis and Therapy of Sterility in the Cow.

By Professor Dr. W. Frei.
Institute of Veterinary Pathology, Zürich University.

Measures for the prevention and cure of sterility must always be based on etiology and pathogenesis. Modern treatments have become complicated, but have not kept pace with recent discoveries as to causation.

Prophylaxis.

Causes of sterility are either exogenous or endogenous; the latter, genital or extra-genital. Of exogenous causes, of recent years alimentary troubles have assumed prominence with regard to the functions of the genital apparatus and its allied organic system, especially the endocrine glands. If the ration is absolutely deficient in calories for maintenance and production, then capacity for propagation suffers. Under those conditions the qualitative composition of the food is often deficient. During the war, existence of hunger sterility in domestic animals was proved, due first to atrophy and defective function of the ovaries, secondly to inability of the uterus to nourish the fœtus, and thirdly to decrease in resistance to infectious diseases on the part of the genital apparatus owing to qualitative and quantitative deficiency in nourishment.

Over-feeding may also lead to sterility. In the case of highly-fed and fat cows, this may be due to the fact that

so-called concentrated foods may be insufficient. Oil-cake contains a large amount of proteins, fats and carbohydrates, but may lack vitamins C and D. Apart from the necessity of vitamin E for reproduction, other vitamins are also essential. The inadequacy of oats in this respect is due to calcium deficiency. In this connection one must also consider the action of vitamin D, ultra-violet rays and the parathyroid glands.

The effect of vitamin deficiency on the reproductive organs is not completely determined. On the other hand, it is known that avitaminosis causes atrophy of the sex glands and also of the thyroid, thymus, pituitary, especially its anterior lobe, and the suprarenals. It is fairly certain that atrophy of these organs interferes with ovarian function. Vitamin shortage also reduces resistance to infectious diseases.

Iodine deficiency also acts adversely, possibly because as thyroxin it acts on the uterus, or else because it is concerned with calcium assimilation.

The ration must therefore contain the correct proportions of proteins, fats, carbohydrates, vitamins and minerals.

Defective lighting is an important factor in causing sterility. Both visible and ultra-violet rays are necessary. Light acts on the nervous and vascular systems, breathing, digestion, secretions and general metabolism and favours calcium assimilation. It is likely that the genital apparatus will suffer in winter. Prophylaxis is simple: well-lighted byres, large windows, opening of windows, letting out of cows to pasture.

Of the endogenous, extra-genital causes of sterility, the endocrine and mammary glands are of particular interest. Endocrine glands chiefly concerned are pituitary, epiphysis, thyroid, suprarenals and thymus. Anterior pituitary lobe controls ovarian function and its hormone brings the infantile ovary to maturity, causes growth of follicles, ovulation, and formation of corpora lutea. The corpus luteum is the antagonist of the anterior pituitary lobe, and ovarian function in respect of follicle ripening and œstrum depends on the equilibrium of both. Excess of pituitary causes ripening of the follicles, excess of corpus luteum causes absence of ripening and loss of œstrum. Epiphysis and thymus gland delay development of female sex glands and excess postpones puberty. In status thymolymphaticus in man one finds hypertrophy or persistence of the thymus and impotence.

Thyroid gland is a synergist of the ovary. Deficient thyroid function, as in cretinism, is followed by impotence.

Ovarian sterility may be due, therefore, to loss of function of the allied endocrine glands. Prophylaxis cannot be applied to those factors; their normal function depends on heredity, mode of life and environment.

The mammary gland has been blamed for causing sterility since good milkers are often unfruitful. From a physiologico-chemical standpoint it is plain that the diet is often in incorrect proportion to the milk yield. Competition occurs between the mammary glands and the system, especially the pregnant uterus, for the food substances circulating in the blood. It has been established, however, that in the last months of pregnancy, fœtal growth causes a loss of milk of only 180-450 kilos. Yields of 5,000 to 6,000 or even more per lactation, given careful feeding and hygienic conditions, are possible for years without affecting reproduction.

Prophylaxis here depends again on correct rations, fresh air, light and exercise.

Research has shown that a good milker often shows calcium deficiency, especially in winter when lack of vitamin D and ultra-violet rays occurs. This may be countered by treatment with cod liver oil or ultra-violet rays.

With regard to the storage of vitamins in cattle, nothing is known. A pregnant cow loses them both in milk and to the fœtus. Therefore, winter feeding must contain vitamin B in cod liver oil and cereals such as bran, and vitamin C as turnips, potatoes, kohl-rabi or malt culms.

The nervous system must be considered. This connects system and genital apparatus on one hand and transmits impressions from the outside world to the body and gonads on the other. Genital organs have double innervation and their functions depend on equilibrium of the sympathetic—parasympathetic systems. This depends partly on internal secretions and partly on feeding. For instance, in districts where there is shortage of iodine, vitamin D, or ultra-violet rays one sees abnormalities of calcium assimilation and consequent disturbance of ion equilibrium in the body, particularly the ratio $\frac{Na—K}{Ca—Mg}$. The K ion stimulates the vagus, *i.e.*, the parasympathetic, and the Ca ion the sympathetic system. The ovary may be regarded as the exciting organ of the parasympathetic system, since in the human subject sympathicotony has been noted after ovariotomy, the climacteric, inactivity of the ovary and anaphrodisia. In human nymphomania parasympathicotony is present. Thus, good milkers often show nymphomania through heavy calcium loss. On observing symptoms of parasympathicotony (arhythmic pulse, bradycardia, bradypnœa, asthma, bowel spasms, salivation, inclination to obesity) one might try treatment with calcium, vitamin D, irradiation, atropin or ephedrin. Hypersympathicotonic symptoms (exophthalmos, mydriasis, dry skin, staring coat, tachycardia, high blood pressure, polyuria, emaciation with excessive appetite) might be corrected with pilocarpin.

Prophylaxis also involves disposal of old animals and those showing disturbance of the reproductive functions.

In cases of sterility due to the genital apparatus, one must avoid infection at birth. Care of spermatozoa demands the removal of exudates which are harmful owing to their containing spermatoxin or bacterial spores. The desirable fluid is that in which sperms remain active longest. Sodü carbonate and bicarbonate are too uncertain, since the optimum H ion concentration depends, not on alkalinity, but on the PH. In particular, too hurried enucleation of corpora lutea and crushing of cysts must be avoided.

Prophylaxis calls for correct rations, hygienic care, avoidance of over-exertion, cold and chronic intoxication.

Therapy.

Therapy is based on knowledge of the physiological functions of the genital apparatus, and the ways in which these are interfered with by abnormalities in different sections of the apparatus. One no longer wonders whether to follow Hess or Albrechtsen, although modern methods have not improved very greatly on the old-fashioned removal of cysts and persistent corpora lutea, and applications, in

endometritis, cervicitis and vaginitis, of watery or oily injections or dry powder.

Failure of local treatment is due to the manifold connections between the genital apparatus and other organs, specially the endocrine glands. We therefore pass from it to treatment of the whole system.

Organo- and hormone therapy have been employed for a long time. Many experiments have been made with ovarian grafts. The action of the grafted ovary is either direct on the original one, or indirect, through the nervous system or endocrine glands. Often the graft does not "take," sometimes it decreases and disappears in weeks or months. As in blood transfusion, non-success may be due to failure to organise, or to the presence of isocytolysins.

Synergism of various ductless glands with the ovaries has given rise to the production of mixed gland preparations for which some degree of success is claimed.

When the anterior pituitary lobe was characterised as the motor for the ovary, its hormones were successfully used for infantilism, hypogenitalism, temporary inactivity of the ovary, early senility. Anomalies observed in small research animals after large doses of this hormone were cellular degeneration and hæmatoma of the follicle. Great care must be taken as to dosage.

After more exact researches in the action of the two nervous systems on the ovaries, one had to consider a combination of hormone therapy and sympathetic or parasympathetic stimulants or sedatives (adrenalin, ephedrin, calcium, pilocarpin, cholin, atropin). Administered substances act either directly or indirectly; they can act only when the sex gland is capable of stimulation.

Treatment of anatomical and functional anomalies of the ovary is difficult because of its inaccessibility and because of our ignorance of the specific action of drugs which stimulate the salpinx. The oviduct reacts to uterine tonics, especially to folliculin and allied preparations; it is known that during and shortly after œstrum, the oviduct is in energetic motor and secretory activity.

The chief aim of treatment of the non-pregnant uterine is the cure of inflammation. This is generally infectious, but may be due to upset nervous equilibrium.

Functions of the uterus depend on the ovary and on the anterior pituitary lobe. In the normal genital cycle development of the endometrium starts with follicle ripening under hormone action, and proceeds under the action of an internal secretion of corpus luteum. During œstrum uterine contractions are due to folliculin or anterior pituitary hormone. The corpus luteum then provides a further secretion which checks follicle ripening and causes proliferation of the mammæ. Further pregnancy and birth are influenced by the same three hormones. Removal of persistent corpus luteum allowed of follicle ripening; if carried out immediately after œstrum prevents nidation, if later, generally interrupts pregnancy. Since, during pregnancy, follicle ripening, œstrum and even conception occasionally occur, it is evident that the different functions of the corpus luteum may be divided, since it appears to secrete four different hormones.

Theoretically one should be able to restore hormone equilibrium by injections or by grafting the appropriate glands. Few hormones are, however, suitable for the purpose.

Folliculin is employed to hasten follicle ripening, to produce œstrum, to develop the uterus. Pituitary extract is used to activate the ovary or to cause contractions of the uterus. Corpus luteum extract is injected to prevent uterine contractions during pregnancy, follicle ripening and ovulation. In spayed animals it causes uterine development and mammary hypertrophy and increases milk secretion. Anterior pituitary lobe has the same effect. The administration of these extracts is possible only in certain cases. It fails either because endocrine disturbances cannot be observed, or because their results are noticed too late.

An important future task is the placing of the control of sterility on a physiological basis.

H. H.

Sterility in Cattle.

By Professor Dr. J. Wester.
Faculty of Veterinary Medicine, University of Utrecht.

The author opens his paper by quoting at some length from the reports on the same subject presented at the Hague Congress in 1909, and asks what science and practice have taught since that date.

It has become clear that the views expressed by Albrechtsen in 1909 are substantially correct:—

(1) That uterine catarrh is the most prevalent cause of sterility.

(2) That inflammatory conditions of the ovary (cysts and persistent corpora lutea) are not of very frequent occurrence.

(3) That follicular vaginitis plays only a subordinate part in the causation of sterility.

Since 1909 more detailed investigation has been made, and it would appear:—

(1) That mechanical defects, such as stenosis or spasm of the cervix, do not often occur.

(2) That, as a result of inflammatory process occurring in the female genital organs, the secretions become spermato-toxic.

(3) That inflammation of the fallopian tubes is of more frequent occurrence than has been supposed.

But it must be admitted that opinion is by no means unanimous on these points.

It is a fact that blame is often put upon the ovary, in which clinical examination would appear to reveal the presence of abnormalities, when actually a catarrh of the uterus, with consequent spermato-toxic secretions, is the cause. Such uterine catarrhs may be so slight as to escape detection by clinical examination, and it may even require microscopic examination for their recognition. It is not possible even for the most experienced practitioner to determine with certainty in the living animal the nature of an enlargement or swelling which can be detected in an ovary. The author is inclined to think that those who so frequently encounter persistent corpora lutea and express these so easily are in reality expressing normal corpora lutea, and he is of the opinion that this view cannot be repeated too often.

In the course of the examination of 400 ovaries from 200 sterile heifers he has not found a single persistent corpus luteum. In 14 cases a rather small corpus luteum measuring about 1 centimetre in diameter was found. The author considered that this was normal, and he expresses his agreement with Strodhoff, who has said: "It appears to be forgotten that normal corpora lutea occur."

In these 16 heifers were only a few small remains of corpora lutea along with small and large follicles which indicated recent non-ovulation. This was particularly the case in animals slaughtered at the end of November. No doubt the termination of the real period of heat, which occurs in the summer months, played some part in this. No microscopic examination was made of the follicles found in the ovaries.

In cases where the œstrus cycle is normal, as is frequently the case in sterile animals, the view that cysts or corpora lutea are the cause of sterility must be abandoned, and even when there is some irregularity in the cycle it is improbable that the ovary is the cause of sterility.

If, however, animals do not come into season or are persistently in season, and show sinking of the pelvic ligaments, then attention should be paid to the ovaries as a cause of sterility, but even then catarrh of the uterus is more likely to be the primary cause.

There is an enzootic form of sterility in Holland, which may occur even in young animals which have never had a calf, which is due to inflammatory changes in the uterus. In these cases there may be no discharge or it may be so slight as to escape notice.

Clinical examination of young animals is greatly hindered by the fact that, practically speaking, the cervix cannot be examined. One is therefore left in a state of uncertainty as to the real cause of sterility in these animals, and the ovaries are blamed. Only extensive *post-mortem* examinations can throw light on this subject.

Albrechtsen has expressed the view that sterility in young cows is due in practically every case to ovarian disease. With this view Wester disagrees. He believes that abnormalities of the uterine mucous membrane ranging from congestion to muco-purulent inflammation are in the majority of cases responsible.

The lesions are not by any means recognisable to the naked eye in every case, but microscopic examination of sections reveals a variety of abnormalities not discoverable by the naked eye. The exudates from such diseased membranes, even though very small in amount, may be toxic to spermatozoa. Death of a fœtus causing sterility is of very rare occurrence. Among the 200 uteri from sterile heifers examined by the author he found only four in which there was any difference in size of the horns of the uterus—a possible sequel to the early death of a fœtus.

Sterile heifers are usually sterile from the first time they are covered, and the author asks the following questions: Why was the first service without result? Was there any uterine catarrh prior to that service? How could that have occurred?

Vaginal catarrh seldom or never occurs in Holland, and no evidence of it was seen in the 200 cases examined. Is it possible that an infection with Bang's bacillus by way of the alimentary tract can produce uterine catarrh prior to service? Probably not, as experiment shows that this organism does not invade the empty uterus.

The author is inclined to suspect that an as yet unidentified virus taken into the alimentary canal causes sterility either by producing some spermatotoxic or ovotoxic substance.

Therapy.—Pressure on the ovaries for the purpose of removing the so-called cysts is merely empirical, and still more empirical is the expression from the ovaries of the so-called persistent corpora lutea. Nevertheless, ovarial treatment is still carried out. Possibly the uterine catarrh is influenced favourably by some reflexly produced hyperæmia of the organ.

The treatment of the future is to be sought in the use of vaccines prepared from bacteria recovered from the inflamed uteri. Cases of sterility due to salpingitis, in which Albrechtsen's method either cannot be applied or fails, can also be healed by vaccines.

It will be possible to treat male animals which may harbour the virus in the seminal vesicles or prostates. Research and experiment may possibly show that only one or a few of the types of organisms found in the uterus form the primary cause of the inflammation.

Prevention lies in the strictest attention to hygiene, the removal of infected animals, and the control of contagious abortion. The author asserts his faith in the value that will attach to the use of vaccines.

Sterility which is not due to uterine catarrh, but to disturbances of function of the ovary, is of very rare occurrence in Holland, and for this reason Wester does not deal with it in his report.

Animal v. Motor Traction.

The Bullock Team in Australia.

"The excessive price of petrol in Australia has had one curious result," says a Greenock paper. "This season there has been a decided tendency to revert to the horse. There was a tremendous scene of enthusiasm at Charleville (Queensland) when the horse teams came plodding in with the season's clip from the farms out back. Similar scenes were reported from country towns in New South Wales. The reversion was entirely due to the increased cost of petrol. The farmer is beginning to consider the possibility of dispensing with motor traction altogether. It is getting prohibitive in price. The mechanisation of the "back blocks" has received a setback. Even the bullock team is coming into its own again. A string of 28 bullocks looks an extraordinary spectacle when one sees it for the first time. But the bullock team serves its purpose. It gets there sooner or later—usually later. They bring down to the sawmills gigantic logs which in the country could not be shifted in any other way. The bullock does not require much fodder; in fact, he can often "live on the country" as he goes along. With a few months' good feeding he can eventually be disposed of to the commissariat, and so realise his capital value—which is rather a difficult process in the case of a motor-truck.

"A prohibitive price for petrol, therefore, is calculated to send Australia back to the bullock team as a recognised method of traction. The bullock team has made history in Australia. George Street, Sydney, is often pointed out as a thoroughfare which is not geometrically laid out. It was made by bullock teams. In the pioneer days the bullock drivers went down to the quay, got the goods off the ships, and plodded out to the country settlements with them. The bullocks made the path, property owners built along the line, and the bullock track to-day is the principal street of Sydney."

As a deterrent to the exhibition and sale of lower-grade horses, the Shire Horse Society, for their official sale following the Islington show, fixed minimum reserves at which the animals might be sold.

Nomenclature of Sheep.

Mr. W. Jackson Young's Table.

A recent issue of the *Newcastle Journal* contains the following table of the nomenclature of sheep, drawn up by Mr. W. Jackson Young, F.R.C.V.S., D.V.S.M., Divisional Inspector for the Ministry of Agriculture, Newcastle-upon-Tyne:

Events.	Male.		Female.	Remarks.
	Uncastrated.	Castrated.		
Birth to weaning	Wedder lamb Tup lamb Ram lamb Pur lamb Heeder	Hogg lamb	Ewe lamb Gimmer lamb Chilver	A sheep until weaning is a lamb
Weaning to first shearing	Hogg Hogget Haggerel or hoggerel Tup teg Lamb hogg Tup hogg Teg	Wether hogg He teg	Gimmer hogg Ewe hogg Sheeder ewe Ewe teg	Hogget wool is wool of first shearing
First to second shearing	Shearing, Shearling, Shear hogg Diamond ram Dinmont ram Tup One-shear tup	Shearing wether Shear hogg Wether hogg Wedder hogg Two-toothed wether	Shearing ewe Shearing gimmer Theave Double-toothed ewe Double-toothed gimmer Gimmer	A ewe which has ceased to give milk is a "yeld-ewe"; taken from the breeding flock, she is a "draft-ewe" or "draft-gimmer"
Second to third shearing	Two-shear ram	Three-toother wether Two-shear wether	Two-shear ewe	Ewe if in lamb or with lamb; if not, a "barren gimmer"; if not put to a ram is "yeld-gimmer" (Scot)
Third to fourth shearing	Three-shear ram Three-shear tup	Four-toothed wether Three-shear wether	Three-shear ewe Winter ewe (Scot)	After fourth shearing "aged" or "three-winter."
Afterwards	Aged tup or ram	Full marked, aged	Ewe	

Cast Ewes—aged ewes drafted and sold from a breeding-flock.
Culls, Shotts, Tails, Sheddings—inferior sheep selected for rejection.
Cade or **Tiddlin Lamb**—a pet, one brought up by hand.
Crone—an old broken-mouthed ewe.
Crock or **Milled Ewe**—one that has been crossed with a ram of another breed.
Eild or **Yeld Ewe**—a barron ewe.
Guessed Ewe—one not seasonably in lamb.
Kilbit Ewe—one whose lamb is still-born.
Pallies—deformed lambs.
Quinter—a sheep from fifteen months to four years old.
Rig—an imperfectly castrated sheep.
Mule—a grey-faced sheep—*i.e.*, cross between Border Leicester Ram and a Black-Faced Ewe.

The Chemistry of Feeding.

"Time was when agriculture was accounted an exact science and the chemist was expected to prescribe precise formulæ for every problem," says the Agricultural Correspondent of *The Times*. "Rations for live-stock were set forth in terms of protein, oil and carbo-hydrate, and any deviation from the mathematical exactitude of the prescription was deemed to be back-sliding. Few practical farmers, however, have ever adopted this attitude; and while they have undoubtedly benefited by the work of scientists, they have generally refused to make everyday common sense and hard-won experience entirely subservient to theoretical doctrine. Nowadays a more tolerant attitude is observable on both sides. Never before were farmers so ready to accept scientific advice; never before have scientists been so ready to admit that agriculture is so much a product of variable and unpredictable natural factors that it is impossible to bring its problems wholly within the confines of exact formulæ. An excellent example of this growing flexibility of outlook is to be seen in the work now being done at Cambridge University and other research centres towards the modification of feeding-standards which were formerly thought to be unassailable. This work is largely the outcome of a general feeling, shared by farmers and scientists alike, that formulæ based primarily on Continental data did not entirely conform to experience acquired in this country. The protein-requirements of dairy-cows, for instance, as originally formulated by Kellner, are now considered to be too high for British breeds and British conditions, and some interesting and valuable modifications should be forthcoming."

County Councils Association.

The following information, of interest to the profession, is published in the February issue of the *County Councils Association Official Gazette*, relative to the proceedings at the January meeting of the Executive Council of the Association, with particular reference to the report of the Agricultural Committee, which was adopted.

Tuberculosis Order, 1925.

The Committee considered the following Report received from the Advisory Sub-Committee :—

" The Sub-Committee further considered, on the instructions of the Agricultural Committee, the question of payment of compensation in respect of loss due to the segregation of suspected animals under the Tuberculosis Order, 1925.

(*NOTE.—The following resolution on this subject was passed by the Committee when the general administration of the Order was under consideration* :—

" That an owner, whose animals are segregated as suspects but are eventually found to be free from disease, should be reimbursed such loss as he may prove, to the satisfaction of the local authority, to be the direct result of segregation."

and the Ministry of Agriculture's reply thereto was printed on page 313 of the official Gazette for September last.)

Resolved—

That, inasmuch as the principle of payment of compensation to persons injuriously affected by action taken to prevent the consumption of tuberculous milk has already been established by paragraph (14) of the Second Schedule to the Milk and Dairies (Consolidation) Act, 1915, and Article 18 (6) of the Milk and Dairies Order, 1926, the Sub-Committee are of the opinion that the refusal of the Ministry of Agriculture to accept the view expressed in the foregoing resolution is illogical. They therefore *recommend* that the resolution be re-affirmed and sent to the Minister of Health."

It was *Resolved*—

That the Report of the Advisory Sub-Committee be received and adopted.

Inspection of Dairy Cattle.

The Committee considered the following Reports received from the Advisory Sub-Committee :—

" The Sub-Committee considered, on the instructions of the Agricultural Committee, a letter from the Worcestershire County Council submitting the following Minute of their Public Health and Housing Committee upon the subject of the routine inspection of dairy cattle :—

' *Inspection of Cattle.*—Your Committee have considered a communication from the Gloucestershire County Council stating that, in that county, a general half-yearly inspection is made of all dairy cattle and that the Gloucestershire Diseases of Animals Committee, while satisfied with the results, feel that the value of the work would be enhanced if similar action was taken in adjoining counties, and ask, therefore, whether the Worcestershire County Council would consider adopting such a course.

" ' Your Committee are of opinion that the routine inspection of cattle, as a public health measure for the prevention of milk-borne disease, constitutes a question of national policy in view of the irregular distribution of dairy herds throughout the country. In order that some measure of uniformity in the amount of inspection considered advisable may be arrived at, and further, that the question of cost being spread over the consuming as well as the producing areas may be considered, your Committee recommend that the County Council concur with this view and that the question be referred to the County Councils Association for their consideration.'

Resolved—

" That the Secretary be instructed to ascertain the general practice of the County Councils under Article 8 of the Milk and Dairies Order, 1926, and that, in the meantime, the consideration of the communication received from the Worcestershire County Council be adjourned."

" The Sub-Committee further considered the Minute received from the Worcestershire County Council upon the subject of the routine inspection of dairy cattle.

" They also considered a summary of the observations received from the County Councils in reply to their request for information as to the general practice now obtaining in the counties under Article 8 of the Milk and Dairies Order, 1926.

" This summary indicates that, of the 46 County Councils from whom replies were received, 14 have adopted the system of routine inspection and 32 have, for various reasons, not yet done so.

Resolved—

" That the Sub-Committee, having carefully investigated the information and observations received from the County Councils, do not consider, in view of the diversity of expert opinion thereby disclosed with regard to the most effective method of preventing the supply of tuberculous milk, that they are justified in *recommending* the adoption, under the provisions of Article 8 of the Milk and Dairies Order, 1926, of the system of routine inspection of dairy cattle in every county area."

It was *Resolved*—

(*a*) That the Reports of the Advisory Sub-Committee be received and adopted, subject to the insertion of the words " at the present time " after the word " adoption " in the Sub-Committee's final resolution.

(*b*) That the Sub-Committee be instructed to investigate this matter further in due course.

Royal Veterinary College.

The Committee considered the following resolution received from the Gloucestershire Diseases of Animals Committee on the subject of Government aid to the Royal Veterinary College :—

" Veterinary Science and practice being of very great importance to Agriculture, this Committee earnestly hopes that the Government will grant such financial support to the Royal Veterinary College as will enable it to continue its work efficiently."

It was *Resolved*—

" That the Committee are in sympathy with the view expressed in the foregoing resolution, and that the Executive Council be therefore *recommended* to make appropriate representations to the Government."

Zoological Park at Whipsnade.

A Superintendent Appointed.

At a recent meeting of the Zoological Society of London, it was announced that the Council expected to open the Whipsnade Zoological Park to Fellows and to the public at Whitsun, but that a definite date would be announced later.

Captain W. P. B. Beal, M.R.C.V.S., D.V.S.M., late Principal Veterinary Officer of the Gold Coast, has been appointed superintendent, and he will take up his duties next May 1st. Captain Beal is 46 years old, and has retired on pension from West Africa. He was trained at the Royal Veterinary College, London, and has taken post-graduate courses in entomology and helminthology at the London School of Tropical Medicine and Hygiene, and the course of study for the diploma of Veterinary State Medicine in Edinburgh. During the War he was seconded for military service to the Royal Army Veterinary Corps, and served in France. At the time of demobilisation he was a deputy assistant director of Veterinary Services.

On the Gold Coast, Captain Beal had extensive experience in the making of roads, laying out of experimental stations, and control of staff, as well as in devising and carrying out regulations affecting the health of stock and the prevention of disease. It is hoped that his experience will be of special value at Whipsnade, where animals will be kept under conditions of the greatest possible freedom. The initial appointment is for a year, but if Whipsnade Park is a success and funds are available, a great part of the work of the superintendent for many years will be the development of the estate.

Abstracts.

[**Experiments on the Practicability of Performing some Operations on the Intestine of the Horse.** Professor P. P. Timofceff, Director of the Surgical Clinic of the Veterinary Institute of Witebsk, U.S.S.R. *Arch. f. wiss. u. prakt. Tierhlk.*, 1930, Vol. 62, pp. 103-8.]

[*A propos* Major Wall's paper on Twist of the Bowels in the Horse, recently published in the *Veterinary Record*, we reproduce the following abstract as a useful contribution to the consideration of perhaps the most interesting of the many practical questions raised therein.—Ed.]

After alluding to the former widespread belief that the peritoneum of the horse is much less resistant to trauma and infection than that of all the other domestic animals, the author refers to the work and summarises the opinions of a large number of veterinary surgeons who have concerned themselves in this matter. The author mentions that he himself has treated 65 cases of penetrating abdominal wounds in the horse with favourable results in nearly every case. The idea that ventral laparotomy is accompanied by the risk of rupture of the sutured wound is altogether erroneous, as has been shown by several workers, including the author in the experiments to be described below.

Satisfactory healing of ventral laparotomies was obtained by Ilyinsky, and Baldoni of Milan, who each operated *via* the linea alba, and by Marrel and Guenther, who made their incisions along the lateral border of the straight abdominal muscle. Most of the operations on the viscera of the horse, including end to end anastomosis with or without Murphy's button, hitherto reported, have terminated fatally.

The author performed operations on the intestine of 10 horses in order to test the feasibility of such, to determine whether the equine peritoneum is particularly vulnerable to trauma and infection, and to find out whether these operations can be performed by the antiseptic method with expectation of success. The horses were not prepared by any special dietaries; the operations were performed in an ordinary operating room without special surgical prophylactic measures; the edges of the intestinal wounds became soiled with fæces, and silk alone was used for all sutures. The peritoneum was not sutured, but the abdominal wall was sutured in two layers, with quite wide spaces between each suture. Warm Rivanol was employed for cleansing the viscera during the operations. The skin, of course, was shaved and disinfected prior to the laparotomy, and chloroform, chloral or both were used for general anæsthesia.

In the first two horses used for these experiments the laparotomy was performed in the flank by a vertical incision; in the first case an opening four inches long was made in the right side, the base of the cæcum secured in the wound and incised, some fæces and worms removed and, after the application of warm Rivanol (1 : 500), was sutured by the Lembert method. The wound in the abdominal wall, with the exception of its ventral extremity, was sutured by layers and then smeared with an antiseptic paste. Healing was by first intention. In the second case the laparotomy was made in the left flank and about five inches of the small colon excised, an end to end anastomosis performed and the abdomen closed. The horse died seven days after the operation from gangrenous pneumonia, which was ascribed to choloroform. The intestinal wound was found to have united perfectly, but the abdominal wall wound was the seat of localised necrosis consequent on the necessary wide use of artery forceps and ligatures on the numerous and large blood vessels encountered during the operation.

The remaining eight operations were performed *via* a laparotomy made alongside the linea alba on the horse secured in the dorsal position. Incisions varying from 4½-6¾ inches in length and beginning four inches caudal to the extremity of the sternum were made just to one side of the median line. In the first of these cases, which was followed by first intention healing, a thorough palpation of the abdominal organs was carried out. In the second, the apex of the cæcum was opened longitudinally for 4½ inches, some of its contents removed, and closed again by Lembert sutures. Rapid recovery ensued. In the six remaining cases a portion of the apex of the cæcum, varying in length from 4½-8 inches, was removed (apparently by scalpel), and the viscus closed by a purse string followed by a Lembert suture. In two of these cases death occurred from internal hæmorrhage from the cut cæcal wall, and in a third case death followed from peritonitis, which was already in existence (sequel to ovariotomy) at the time when the enterectomy was performed.

In the remaining three cases first intention healing occurred and complete recovery was obtained within 14 days.

In his summary the author advises against the performance of laparotomy *via* the flank in the horse for the reason that, owing to the anatomical arrangement of the muscular abdominal wall in layers, the drainage of a wound is always likely to be unsatisfactory, and also the high vascularity of this part presents a great surgical obstacle both on account of hæmorrhage and hindrance to healing due to local anæmia consequent on the free use of ligatures for cut blood vessels.

Laparotomy *via* the flank further limits the approach to the viscera, whilst ventral laparotomy allows much more scope for this purpose. The region immediately alongside the linea alba is relatively hypoæmic, so that bleeding and exudation are limited, and drainage in this position is well favoured. These experiments show that wounds of the intestinal tract of the horse have a natural tendency to heal quickly and a good chance of success may be expected in abdominal operations in this animal when they are performed antiseptically.

J. T. E.

[**Contribution on the Cure of Colic in the Horse by Rolling.** Staff Veterinary Dr. Priebus. *Zeitschrift für Veterinärkunde*, February, 1930.]

An officer's charger was reported to be showing slight symptoms of colic after having eaten his breakfast as usual.

The animal was quiet, showing intermittent signs of malaise by stamping and walking round; girth not noticeably increased, mucous membranes pallid, pulse 45, strong and regular, respirations 54, superficial; peristaltic sounds almost completely absent on both sides. Rectal examination was strongly resisted, and showed in the right pelvic region a marked absence of bowels, particularly of the head of the cœcum. To the left, the large colon was in the pelvis.

A cord was felt running obliquely down from right to left.

Diagnosis.—Displacement of the left colon (possibly twist of the left portion of the large colon to the right).

Treatment.—An unsucessful attempt was made *per rectum* to raise the portion of bowel to the left of the pelvic cavity to a normal position. Enemata and a hypodermic injection were given.

The symptoms became more urgent. After four hours the patient broke out into a cold sweat; the extremities became cold, mucous membranes a dirty-red colour, pulse 68, weaker, respirations 58, abdomen much distended. Further rectal exploration was prevented by straining. As a last resource, rolling was decided on.

The animal was made to lie on his right side, and he immediately rolled over on to his left. He was then made to rise and to lie down again on the right side. This process was repeated eight times, but twice he rolled back on to the right side before he could be prevented.

The patient was walked about and received further enemas and some caffein hypodermically. Subsequent rectal examination showed the position of the bowels to be practically normal, though much flatulence still existed. Peristaltic sounds were re-established. After half-an-hour the horse took food and water and in due course made an uneventful recovery.

(Eight pages of explanations, quoting 18 articles on the subject, follow.) H. H.

[**Chloral Hydrate Narcosis in the Horse, by the Oral, Rectal, or Intravenous Route.** Hahn, T., *D.T.W.*, 1930, 38, 34, 533-8.]

Oral.—This route may be adopted, but is often unsatisfactory. The preparation of the patient, the repeatedly delayed administration *per os* (or refusal by this route), the giving in large amounts of fluid *via* the stomach tube, and the different effect on the duration of the narcosis, make this method disappointing.

Rectal.—The route should be employed only when others fail.

Intravenous.—This is the best route and may be easily employed by practitioners. A 10 per cent. solution in tap water is employed (from 20 gms.-60 gms.; average 40 gms.-50 gms.). The solution must be freshly prepared and is injected at blood heat. The needle is introduced into the raised vein and a steady flow of blood produced. The solution is contained in a calibrated cylinder to the bottom of which is attached a length of rubber tubing. Before making connection with the needle, the solution should be observed to flow easily from the cylinder. The tube is connected with the needle and the cylinder raised, care being taken that plenty of solution is in it. This is allowed to flow into the vein; if any stoppage in flow occurs the cylinder is lowered, the tube disconnected and the infusion recommenced on the other side. Normally, at the end of the infusion, the cylinder is lowered, blood allowed to flow into it to wash out any solution from the needle and the latter withdrawn. On directing the needle downwards only blood should first flow out, followed by the superimposed chloral hydrate solution. It is advisable to carry out this control test after every infusion.

The intravenous route may be used without previous preparation of the patient and narcosis occurs punctually before the operation. Further, a smaller amount of chloral hydrate is required than when the oral or rectal route is employed.

J. H. M.

[**Anti-slip Shoes.** Major-General Dr. Semmler. *Zeitschrift für Veterinärkunde*, February, 1930.]

The fact that sharp edges on the ground surface of shoes prevent slipping has been proved by, amongst others, the coachmen of the former Imperial stables, who removed the rope insets from shoes provided with them in order to obtain the full benefit of the grooves. Arising from this idea, the following design of shoes has been evolved by the Hannover Military School of Farriery as offering the largest numbers of edges and corners on the ground surface:—

Fig. 1.

Fig. 2.

Any usual stock shoe can be adapted, provided that it is well heated. It is brought to blue heat, and the inner edge of the foot surface cut away obliquely with a fuller, the cut starting close to the fullered groove, extending from the toe to the quarter, and beginning at the right. According to the size of the shoe, 3 to 5 indentations are made in each branch. The toe may be shaped as in Fig. 1 or Fig. 2, depending on the amount of toe wear.

These shoes have given good results on various surfaces, including asphalt. The sharp corners and edges persist till the shoes are worn thin.

H. H.

[**The Use of the Neumann-Schultz Stomach Tube.** Grassnickel, W., *D.T.W.*, 38, 43, 682-3.]

The author considers that the introduction of a short mandrin into the end of the tube, as recommended by Doenecke, is unnecessary. The tube should consist of vulcanised rubber, with a polished surface.

The tube is introduced *via* the nostril and slowly and carefully passed until the pharynx is reached. Swallowing motions are now desired and it is recommended that air be blown through the tube to encourage these. The tube having been swallowed, resistance will again be encountered; this can be overcome by again blowing air into the tube and thus creating dilatation of the œsophagus. After the administration of the desired medicament, air should once more be introduced to clear the tube of fluid.

It is to be noted that air must flow through the tube when the point is in the pharynx, otherwise a "kink" is present and when once the tube is presumed to have passed this point, air introduced must be observed "flowing" down the œsophagus. J. H. M.

Colonial Veterinary Report.

Tanganyika Territory.

[**Annual Report of the Department of Veterinary Science and Animal Husbandry**. The Government Printer, Dar-es-Salaam, 1930, price 5s. Obtainable from the Crown Agents for the Colonies, 4, Millbank, S.W.1.]

This report is a foolscap publication of 76 pages, with 15 plates of excellent photographs depicting various classes of local and imported stock.

Stock Census.

Cattle.	Sheep.	Goats.	Pigs.	Donkeys.	Other Equines.
4,868,000.	2,135,000.	2,907,000.	2,380.	50,000.	170.

Staff.

The Director, Colonel F. J. McCall, C.B.E., M.C., has the assistance of 21 veterinary officers and 27 stock inspectors. The Veterinary Laboratory is under the direction of Mr. H. E. Hornby, with whom are associated three research officers. Two hundred and ninety-six quarantine guards (who travelled 274,000 miles on foot) were engaged throughout the year.

Captain F. J. Sheedy, the Deputy Director, was transferred as Principal Veterinary Officer to Malaya, and Mr. Hornby assumed this office in addition to his duties as Veterinary Pathologist.

Research.

Abstracts of the papers by Cornell and Evans on "Rinderpest Research," H. E. Hornby on "Trypanosomiasis," W. H. W. Baird on "Treatment of Goat Scab," and "Attempts to Transmit Trypanosomiasis by Flies other than Tsetse," N. R. Reid on "Strongylosis," and by H. E. Hornby on "Some Problems of Stock Feeding," will appear in subsequent numbers of the *Record*.

Diagnosis.

The usual assistance was given by the laboratory and 804 specimens were reported on.

Biological Products.

Litres of anti-rinderpest serum numbering 5,891 were prepared during the year. It was noted that this serum was more effective towards cattle of the types producing the serum than upon those of other localities. As a routine procedure for the elimination of trypanosomes, virus, is now drawn into citrate solution containing also tartar emetic 1 : 20,000, as is the practice in Nigeria.

Disease.

Rinderpest.—The disease continues in the districts of Arusha and Musoma contiguous to Kenya. Infection in the Mwanza district was eradicated. The Director emphasises his view that in a territory like Tanganyika it would be dangerous to employ disease-disseminating material (such as the common "double-inoculation") in the hope of eventual suppression, and points out that the activities of his Department have successfully cleared the whole territory, excepting those districts on the infected northern border. It is hoped that these will also respond within this year.

Trypanosomiasis continues to occur in the regions bordering the tsetse belts. *T. congolense* and *T. vivax* are the species concerned.

East Coast Fever.—Infection from this disease is now attracting greater attention, owing to the successful elimination of rinderpest, but it is not suggested that any extension has occurred beyond the areas suspected of being enzootic. Where dipping has been practised the disease has been checked, but it is premature yet to consider universal control by this means in such a territory as Tanganyika.

Anthrax.—The detection of 15 outbreaks with 226 deaths is held to be evidence of increased observation. Fortunately, the African appears to possess some tolerance to infection.

Tuberculosis.—Despite the many opportunities for *post-mortem* examination, only four cases of bovine tuberculosis have ever been recorded in this Territory. The fact is of importance in view of the increasing incidence recorded in Africans of certain areas, and merits a more close enquiry and intradermal testing, which it is intended to carry out.

Contagious Bovine Pleuro-pneumonia.—This disease is well under control, and in cases of local "flare up" within the area of quarantine, is satisfactorily dealt with by glycerinated lymph.

Public Health.

Meat inspection was carried out at 16 of the larger centres, and embraced 16,500 cattle and 22,000 sheep and goats.

Only one case of tuberculosis was detected. Carcasses of cattle to the number of 280 were condemned, the great majority for the presence of *Cysticercus bovis*.

Genetics.

Observations have been continued, both at the Government Stock Farms and at the Mpwapwa Laboratory, into the acclimatisation of imported stock and the growth and resistance of the progeny. Ayrshire, Friesland, Devon, Aberdeen, Afrikander and Indian Zebu have continued under experiment. The present evidence is that the Afrikander and Indian crosses are the most hardy, and bullocks of these classes have been distributed to many parts of the Territory to ascertain their ability to stand up to natural African conditions.

Native cows are now trained to give their milk after weaning the calf at birth.

A new stock farm is being established in the Southern Highlands, where it is thought woolled sheep may succeed. This farm is located 320 miles from the nearest railway station.

The Indian buffalo has been introduced with a view to experimental crossing later with the African, and with the object of assisting the elucidation of problems in immunity to trypanosomiasis.

Three pages are devoted to a carefully-considered study of the indigenous breeds of sheep and goats.

On the question of improvement, Mr. McCall wisely points out that "a live dog is better than a dead lion," and that resistance to disease and to the adverse conditions of grazing and water at certain seasons is all-important. The investigations in progress will go far to answer the more important of the problems, and Eastern Africa owes a debt of gratitude to Tanganyika for her pioneering work.

Pastures.

The collection of forage plants continues to be made, and fodder trees are now being grown.

Mineral shortage is under investigation and, recently, a biological chemist has been appointed to the Department.

Economics.

The establishment of stock markets and the control of

The Dubbing of Poultry.

Interesting Test Case at Banbury.

We reproduce below extracts, from the *Banbury Guardian* of February 5th, of a report of the proceedings of a Court case which will be of considerable interest to many of our readers.

. . . . .

A case, creating widespread interest, came before the County Justices at Banbury on Thursday, raising the whole question relating to the dubbing of poultry, a practice which is fairly common amongst breeders of game fowl.

The prosecution was instigated by the Royal Society for the Prevention of Cruelty to Animals, and the case was directed against William Robert Maurice Hammond, of the Cropredy Poultry Farm, for causing unnecessary suffering to a number of fowl at Cropredy. There was another charge against Mabel Bell, an employee of Mr. Hammond, of performing the act complained of.

Mr. Gordon Jones, of London, appeared on behalf of the prosecution, representing the R.S.P.C.A., and Mr. Harold Eaden, of Birmingham, instructed by Messrs. Stockton, Sons and Fortescue, appeared for the defence.

The Clerk said the information was lodged by Inspector Keogh, of the R.S.P.C.A., and the dates of the alleged cruelty were stated to be November 24th and between December 1st and December 8th, 1930, by cutting the combs of a number of fowl on two specific occasions.

Mr. Eaden pleaded not guilty.

Miss Bell was jointly charged for doing the alleged act of cruelty and Mr. Eaden pleaded also not guilty to this charge.

Mr. Eaden said the facts were not in dispute.

Mr. Gordon Jones said it was only a technical and expert matter. The case was directed against the practice of dubbing poultry, the general practice of amputating combs in cockerels. He would say at the outset that he admitted in certain cases the operation of dubbing might be necessary in the case of injured and badly diseased combs, but the operation in those cases must be performed properly and in his submission such cases were rare. It was against the general practice of dubbing his case was directed. There were some poultry keepers who made a general practice of dubbing their fowl and they dubbed both show and utility birds and it was because combs of certain breeds were heavy and caused a certain amount of trouble that it was done. He knew it was said, and it might be said there, that dubbing was necessary to the poultry breeder, because it was a preventive against injuries caused by fighting birds. Again it might be said, and was said sometimes, that dubbing was necessary, because it was a necessity against possible frost bites, and also advisable because it increased the sexual fertility of the birds. He was going to meet those points in his evidence and so he would not keep them long in opening the case. His case was that, in general, on all those three grounds dubbing was unnecessary and cruel. Mr. Gordon Jones quoted a case of Murphy versus Manning and other cases in support of his case and he concluded by submitting that dubbing was a painful and unnecessary operation, in fact it was a horrible operation which caused a great deal of suffering to the unfortunate fowl.

P.C. Locke, of Bourton, said that on Friday, December 5th, he went to Mr. Hammond's Poultry Farm, and told Mr. Hammond he had received information of alleged cruelty to a number of fowl owned by him, and that he was investigating the matter.

P.C. Locke went on to say that Mr. Hammond showed him 12 black cockerels running about with other cockerels in a pen. Defendant volunteered the statement that the birds were dubbed on November 27th by Miss Bell. Witness examined the birds, but not closely, though he could see that all the 12 had had their combs cut. Mr. Hammond then accompanied him to a poultry house and two crates of cockerels were brought in, one containing 11 and the other 12. He examined the birds one by one and he found they had been dubbed, the whole 23, to about an inch of their heads and there were seven stitches in each comb. All their heads were more or less covered with blood stains. Four birds in particular also appeared to be in a weak condition. One bird in particular had one inch of the back part of the comb in a bleeding condition, and the other part was matted and dirty. It had also a portion of its wattles cut and and its neck and feathers were covered with blood. The bird appeared to be suffering. Mr. Hammond admitted it was in a mess and not fit to go with the other birds. Witness afterwards went with Mr. Hammond to see Miss Bell and he asked how many birds she had dubbed on December 2nd, and she said "25—no 24 to be correct—on that day."

Inspector Keogh, of the R.S.P.C.A., stated that on December 6th, he visited Mr. Hammond's poultry farm and examined a number of cockerels which had had their combs and wattles cut. He counted as far as 40. The combs had been cut off to about three-quarters of an inch from the head. Most of the combs were swollen and bleeding. They shook their heads and dropped their wings and appeared to be in great pain. Mr. Hammond was present and witness told him his opinion and asked him how many cockerels he had dubbed and he said he had dubbed 23 on November 24th and 24 on December 1st. Miss Bell did the dubbing under his instructions. Miss Bell came to the farm and he had a conversation with her. Mr. Hammond accepted the responsibility. In most of the combs the stitches were broken. The dubbed birds, with one exception, were not separated, but running loose with other fowl on the farm. The one by itself seemed worse than the rest and he showed it to Major Taylor.

Major F. J. Taylor, veterinary surgeon, Oxford, stated that on December 8th he went with Inspector Keogh to Mr. Hammond's poultry farm, and he inspected a number of birds, and those which particularly drew his attention were some which Mr. Hammond had dubbed. The number was 23. One bird he examined very carefully and found a wound where half the comb had been removed with a knife and the wound was half an inch wide and from three to four inches long. There were also wounds on both sides of the head where the wattles had been removed. The wounds were in a swollen, painful and dirty condition and were bleeding. There was evidence of stitches having been put in and also not removed when they ought to have been, and the wounds had become septic. It appeared to be a bird six months' old by the size. Miss Bell showed him her method of the operation as she had performed it. She said she took the comb between her fingers, and removed the upper half with a sharp knife, afterwards inserting a long and continuous suture to prevent hæmorrhage and death. The wound had an undulating surface as though it had not been cut evenly. It seemed that the comb had been cut with an instrument which had not been sterilised and the wound was septic. He was told by Miss Bell that no after-dressing was used. The stitches ought to have been taken out in three days, but

---

itinerant trading, with its attendant evils, has been a policy for a number of years. Permits for the movement of 228,000 cattle were issued.

Hides and Skins.—Great interest continues to be taken both by veterinary officers and by those of the Administration to encourage better preparation. Articles in the vernacular have been published and exhibitions have been staged. The world slump in prices would have been felt more keenly had an improvement in quality not been a slight offset.

Meat.—An account is given of a factory established in the Mwanza Province to utilise the surplus native-owned cattle there. It is equipped to prepare beef extract and to make canned beef as well as the usual by-products; it also manufactures a form of preserved meat for use on plantations and estates as labour rations.

this had not been done. The operation of dubbing was one which required skill and should be performed by a veterinary surgeon. If the operation was absolutely necessary and he was operating, he would make the bird unconscious by an anæsthetic, and ether was perfectly safe. He had recently performed four operations under an anæsthetic. The combs and wattles could be removed without pain by that method. He considered that stitching was unnecessary, because stitching did not prevent hæmorrhage. All instruments should be boiled for ten minutes before use and that applied to the material used for stitching, and the wounds ought to be dressed with an antiseptic right away, and if stitches had been put in they should be removed in three or four days. He regarded the operation as a painful one if performed without an anæsthetic; otherwise there was great pain and suffering. Even if the operation had been properly performed there was pain afterwards for a week or ten days. The birds which had been operated upon should be separated from the other birds for a fortnight. In the old cock-fighting days combs were removed with the object of making birds fight better and for protecting them as well. He did not regard dubbing as a preventive to fighting. The real cock-fighting birds had the entire comb removed. The dubbing of cocks and cockerels was not necessary and he saw no necessity for it whatever, generally speaking. He had kept poultry himself, but he would not consider himself an expert like Mr. Hammond. He did not consider that dubbing was necessary as a general preventive to frost-bite. Dubbing in cold weather would tend to induce frost-bites, because of the open wounds. There was no connection between the comb and the generative organs. In addition to this bird he saw other birds, but did not examine them minutely. Considerable suffering had been caused by dubbing in the case of the bird he specially examined and, if the operation had been performed as described by Miss Bell, he would expect pain and suffering to follow.

By Mr. Eaden—There was, after an operation, always the aftermath of pain, depending on the extent of the operation and other causes. He was called to give evidence as a surgical expert. He did in his early days perform the operation of dubbing, but only in a limited way. He did not know that dubbing was a general practice. He considered dubbing unnecessary. He knew the Minister of Agriculture set up a Government Department relating to the treatment of poultry amongst other things, but he did not know that thousands had been dubbed under the auspices of the Department. He still thought dubbing was wrong and he hoped the Ministry would be prosecuted—(laughter). He called dubbing a shameful operation.

His practice was a general one and operation on young bull calves was very painful, operation on sows was also painful and often done by unskilled people. Those people were not prosecuted at present.

The Clerk said the Bench knew about those operations and they were allowed under the Act of Parliament.

Professor G. H. Wooldridge, Professor of the Royal Veterinary College and Vice-President of the Royal Society of Medicine, and with other qualifications, was next called. He said he had 30 years' professional experience. The original reason for dubbing was for purposes of fighting, to reduce the damages of fighting. The combs and wattles were not very sensitive when sound, but they were when injured. The actual operation of dubbing would be painful in itself though not so painful if it was clean cut. The pain during the healing process would be far greater than the operation itself. One knew there was bleeding and exhaustion by hæmorrhage. In his opinion if poultry were properly housed during the cold weather they could be safeguarded from frost bites and, therefore, dubbing was unnecessary and he said that he disagreed that dubbing had any effect on fertility. In the case of frost bite on the comb it could be treated in its first stages, but otherwise dubbing might be necessary. Frost bites were very rare in poultry. With regard to the method of the operation he saw no objection to the method adopted by Miss Bell if it was properly carried out, but still thought the operation unnecessary. After an operation the birds should be separated from other fowl and if there was much hæmorrhage they should be isolated. If this were not done they might be subject to attacks by other fowl. Suturing the full length of the cut comb would be unnecessary. If dubbing had to be done at all it would be better to do it at an earlier age.

He knew of Professor Hickson, though he did not know him personally and he had respect for his opinions, though he would not necessarily always accept them. He had an open mind in view of the statements which had been made in connection with the experiments now taking place under the auspices of the Ministry of Agriculture.

By Mr. Eaden—He had not dubbed a fowl as such. He had always refused to perform the operation in the ordinary way. He had done the operation as a surgeon for special reasons.

By Mr. Jones—In the light of his veterinary knowledge he knew of no advantage to be derived from dubbing.

Major John E. Bosley, Veterinary Inspector for the Romford Division of Essex, said he was well acquainted with the practice of dubbing. It originated with the old game fighting. The operation of dubbing was painful in itself and after the operation there would always be pain. He could not conceive a case where dubbing should be done apart from surgical necessity or cock fighting. If dubbing had to be done it should be done by means of an anæsthetic. It was a painful but not a difficult operation. Having put stitches in, a fowl should not be put amongst others. It would be most iniquitous. After the operations each cockerel should be separated. With regard to frost bites, they were of rare occurrence and they could be treated without having recourse to amputation. It was most improper to leave a wound after an operation to become septic. It was not necessary to dub fowl for frost bites, or fertility purposes. At a good show fowl were disqualified if their combs had been interfered with.

By Mr. Eaden—If Mr. Hammond dubbed his fowl to prevent the frost bites he took the wrong line. He should take reasonable care of his fowl himself and keep them in at night. He had dubbed many hundreds in his time—(Laughter.) He did it years ago when they thought it was useful but he had discovered since then that dubbing was no use and so he gave it up. That was in 1924.

Mr. Eaden—When the authorities in 1923 said dubbing was the proper thing to do.

Witness agreed that suturing was the proper way to stop bleeding. He agreed Mr. Hammond in that respect had done a recognised thing.

Mr. William Charles Fisher, who has a poultry farm in Surrey, said he had had 30 years' experience in poultry rearing and was a lecturer and judge. He had judged at the Crystal Palace several times. It used to be the fashion to breed fowls with large combs, but since the war there had been a tendency to breed fowl with smaller combs, but they still awarded points for the size and quality of the combs. He had dubbed himself and it was necessary when the comb became too large or became diseased. Otherwise he did not consider it necessary. His own farm was 500 feet above sea level and he did not suffer from frost bites amongst his fowl. He did not think the dubbing of combs helped fertility. He would not dub fowl on that account. When birds were dubbed they should be carefully taken care of and separated from the rest. If sutures were put in and allowed to become septic it would be most improper. Very often a comb was taken off because it was faulty and it increased its financial value.

By Mr. Gordon Jones—He had not found any increased fertility from dubbed birds.

Joseph D. Goodchild, North Looe Farm, Ewell, Surrey, said that dubbing was not necessary to prevent fighting or for frost bites. He kept his Leghorns in the houses five months in the year. They ought not to be in the open in the very cold weather. Dubbed cockerels were not more fertile than the undubbed. He had not seen fowl die after dubbing but he had seen them look in a sad way. If a bird was dubbed it should be kept in a separate pen on clean straw. He thought dubbing in general should be condemned.

Miss Mabel Bell said she was the manageress on Mr.

Hammond's farm on which there were 2,500 mature birds and there were 3,000 birds reared each year. In three years she had dubbed 100 birds, only two of which had died, and they died two or three days after the operation. She first wiped the combs and wattles with methylated spirit and then used a very sharp clean knife, which was sterilised. She severed the comb with one stroke of the knife. Scissors were used to sever the wattles and these were also sterilised. If there was undue hæmorrhage she sterilised a needle and inserted a silk stitch. She painted the comb and wattles with a solution of iodine. The stitching had an effect of arresting the hæmorrhage. She had never found the wounds in a septic condition and had never found any disadvantage in leaving threads in the wound and allowing them to come away by themselves. After the operation the birds were fed and were afterwards segregated. Witness found no advantage in having the dubbed birds segregated in a group. They did not fight. After four or five days the birds had quite recovered.

By Mr. Gordon Jones—Witness said that prior to her present occupation she spent six years on one farm and one year on another. She commenced dubbing for Mr. Hammond two years ago. With regard to the two birds that died they seemed to be quite healthy before they were cut and she did not know why they died, or whether it was due to the operation or not. The sutures used after the operation were sterilised.

She considered dubbing was a good thing to prevent frost bites.

By the Chairman—Witness described how the birds were housed. She said she saw no open wounds because she inspected the birds every morning. She did the dubbing alone. She held the bird on her knee, held the comb in one hand and the knife in the other.

Arthur Herbert Brownson, of Nuneaton, treasurer of the National Poultry Council, said he was a practical poultry keeper of many years' standing, and had studied scientific methods with regard to the rearing of poultry. In his view there were advantages commercially in dubbing. The first was a preventive against frost bite and birds were dubbed according to the size of the comb. He considered Miss Bell dubbed the birds quite efficiently provided she used proper surgical scissors. He saw the bird produced the previous day and he considered it had been very skilfully dubbed. With regard to the second point dubbing was a safeguard against fighting and he had had a great experience in that direction because he had bred a great many game birds with pugilistic tendencies. There was a less tendency to fight amongst dubbed birds. He also believed in the theory that dubbing increased the vitality of the bird, and hence its fertility. Dubbing was most desirable on a commercial poultry farm. The pain of dubbing was only momentary and in case of a bird suffering from frost bite it was a merciful release. He had not lost a bird through dubbing.

By Mr. Gordon Jones—There was amongst game cocks a tendency to fighting, but fighting amongst Leghorns and breeds of that kind was almost non-existant, except in the breeding season.

It had been proved by practical breeders that dubbing was advantageous to fertility.

Paul Geoffrey Thompson, locum tenens to Mr. Shingler, veterinary surgeon, Banbury, was next called and in answer to Mr. Eaden said he examined the dubbed birds at Mr. Hammond's farm, and he could safely say the birds had been skilfully dubbed as a veterinary surgeon would have done it. The farm was clean and well kept, in fact it was an ideal, modern farm.

By Mr. Gordon Jones—Witness said he had been qualified three years. The method in which the operation was carried out was satisfactory. There was only one bird not normal. It looked a little bit drooping. He examined the birds and he did not see the condition of them as described by Inspector Keogh. He could not argue the point respecting the connection between the comb and the sexual organs. He saw 46 birds five days after the operation, and, with the exception of one, they were all very happy. Dubbing was the only reasonable and commercial way of preventing frost bite. He did not think the amount of pain in cutting the comb was very great.

George Farmer, J.P., Hinckley, said he had farmed all his life and had always kept a large number of poultry. He considered dubbing poultry was just as necessary as any other operation on the farm. They were much more susceptible to frost bite in the Midlands than in the South. The safest and kindest way was to dub the cockerels at six months old before they began their duties. A dubbed bird in his fourth year was often better for breeding purposes than a non-dubbed bird in his second year. He thought Miss Bell gave an excellent description of the way she dubbed her fowl. He had never heard of giving a general anæsthetic when dubbing a fowl. It was possible though it was not required. It was not done in this country in much more painful operations to cattle.

William Hamnett, of Blackpool, president of the National Poultry Council this year, and a member of the Ministry of Agriculture's Poultry Advisory Committee, was next called, and said that in 1923 the Ministry of Agriculture founded an experimental breeding station at Nantwich, Cheshire, and it was under the direct control of the Ministry presided over for many years by Professor Hickson and now by Professor Dunkerley, of Manchester, and witness laid out with a committee of five the experimental station and was still connected with it. Since 1923 they had experimented on the White Leghorn. They began operations in dubbing in 1924 and they kept records which would soon be published with regard to fertility from dubbing. Every male bird was dubbed the first year and the operation by Miss Bell was properly performed. He considered dubbing was essential to get the best results. He had seen Mr. Hammond's houses, and they were suitable in every way. The preventive measure against frost bite was to cut the comb every time. He did not agree dubbing was cruel. He had dubbed thousands. He had done 500 a day. Commercially dubbing had great advantages. He did not consider deaths from dubbing averaged half of one per cent. The work at Nantwich was experimental work and they had got to the stage when it was considered essential that dubbing was required.

Mr. Eaden, in addressing the Court at the close, said he was grateful to the Bench for their patience in listening to the case, which was of more than local importance and might have far-reaching results. It was of interest to the whole poultry world in this country, and that was his justification for bringing before them as witnesses a number of eminent gentlemen who were in a position to put the true facts before the Magistrates.

Mr. Eaden went on to quote cases bearing on the subject of cruelty and especially pointed to Lewis v. Fermor, which was enlightening. He asked the Bench to dismiss both cases.

The Bench retired, and after an absence of half-an-hour returned into Court, and the Chairman said the Magistrates were unanimously agreed that the general practice of dubbing was not necessarily cruel, but they thought in the case before them sufficient care and supervision was not exercised after the operation and thereby unnecessary suffering was caused. There would be a conviction and a fine of 10s. in each of the four cases mentioned. They would make no order for costs in view of the fact that it had been a very long case and that it had involved the special question as to whether dubbing was necessarily cruel or not.

Mr. Eaden asked the Bench to state a case and stay execution pending the decision of the High Court, and the Bench agreed.

Authorities seem to be agreed that best results are to be had from careful and efficient supervision of growing chicks from the time they are hatched until they are free from those diseases and affections that interfere seriously with growth. Sanitation comes first and has its application in the selection of eggs for hatching; careful attention to chicks so as to prevent exposure, if possible, to disease and intestinal and other parasitisms. Careful attention to feeding, giving food that combines the necessary requirements for normal growth, and management that will keep the intestinal tract in a healthy condition are next in importance to sanitation.—*North American Veterinarian.*

Bovine Tuberculosis and the Milk Supply.

Lord Moynihan's Reply to Yorkshire Farmers.

"Lord Moynihan was severely criticised in Leeds yesterday," says the *Sheffield Daily Telegraph* of February 14th, "by the members of the West Riding Farmers' Union, who passed unanimously a resolution of protest against his speech in the House of Lords on the evil results of raw milk. Later in the day he replied to the criticism.

Mr. R. Crawshaw (Sheffield) said that Lord Moynihan had struck below the line. What was wanted from the medical profession was support for what the farmers were doing in the production of new pure milk, but what had been done was to push the interests of those combinations who killed the milk by boiling it to save it from going sour.

"Mr. H. Charlesworth (Barnsley) said that, in the industrial area of the West Riding, the farmers were supplying pure clean milk, but the effect of Lord Moynihan's speech would be to push all the supply trade into the hands of the co-operative societies, who bought milk from all over, and, pooling it, had to pasteurise it to keep it. With regard to the hunchbacks spoken of, the manhood and womanhood of the West Riding was as fine as anything in England.

"Mr. J. Thompson (Wetherby), who said he had known Lord Moynihan all his life, and had the highest regard for him, thought his speech most unfortunate. Among whom, he would ask, did these deformities and diseases occur? Not among new milk drinkers but those who took the pasteurised article.

"Lord Moynihan, in a subsequent interview with a reporter, replied to the criticisms passed by the West Riding Farmers' Union upon his speech.

"Lord Moynihan said: 'I welcome the attention that has been given to my speech, because my figures are indisputable. They are founded upon those of Sir Robert Jones, of Liverpool, who declares that 70 per cent. of surgical tuberculous cases in humans are derived from contaminated milk. I am all out for pure milk, and my best friends ought to be the farmers, but my first duty is to those who suffer in our children's hospitals and our general infirmaries through drinking impure milk.

"'This may seem to be against my personal interests as a doctor, but my main desire is to prevent disease by stopping the use of tuberculous milk. It is a serious menace to life and limb. I was not talking particularly about the West Riding of Yorkshire, as my critics in Leeds seem to think, but of all England, from Cornwall upwards. I was not particularly pushing pasteurisation, but making a plea for pure milk.

"'I regret that I did not know the Yorkshire farmers were meeting this afternoon in Leeds, for I should have been pleased to have met them to discuss the matter with them. The facts are as I gave them in my speech. I have no desire to withdraw any of my statement. If farmers are trying to give pure milk I am glad to know it.'"

[The speech referred to above was reported in our last issue.—Ed., *V.R.*]

. . . . . .

The following letter, relative to this subject, appeared in *The Times* of February 23rd:—

To the Editor of "The Times."

Sir,—I hope that Lord Moynihan will substantiate or withdraw his startling figures that out of the 3,250,000 milking cows in this country over 1,000,000 are suffering from tuberculosis. In Gloucestershire the cows in milk and in calf are examined twice a year by veterinary surgeons appointed by the County Council's Diseases of Animals Committee, of which I am the chairman, and upon referring to the statistics for the past three years I find that they are as follows:—

	No. of cows in milk and in calf.	No. suffering from tuberculosis.
1927-28	45,984 ...	548
1928-29	43,387 ...	341
1929-30	45,401 ...	376

The result of our adopting this system of veterinary inspection has been that the number of animals suffering from tuberculosis has greatly diminished, but we are still hindered in our good work by diseased animals coming into Gloucestershire from other counties in which no veterinary inspection exists.

As yet only about half of the counties in England and Wales have these inspections, and I cannot understand why the Ministries of Health and Agriculture allow such neglect to continue.

Your obedient servant,

Gilbert McIlquham.

Staverton House,
near Cheltenham.

Weinberg Casting Pen Demonstration.

"The City of London Markets Committee, having stipulated that the Pen could be installed at Islington only if it was used in all places where Shechita was carried out for the London Board, and the Mersey Docks and Harbour Board, which has control of the Slaughterhouses at Birkenhead, where a large number of cattle are slaughtered for the London Board, having expressed a desire for a practical demonstration of the Pen before coming to a decision as to the installation of the apparatus at Birkenhead, a demonstration was held at Liverpool this week," says the *Jewish Chronicle* of February 6th. "On Sunday the proceedings were of a private nature to test the Pen under normal working conditions. The public demonstration was held on Monday at the Abattoir, Trowbridge Street. Among the 250 people present were:—The Markets and Health Committees of the City Council, Dr. A. A. Mussen, local Medical Officer of Health, Mr. T. Eaton Jones, Chief Veterinary Officer, Rabbis Yoffey (Manchester), Unterman and Krassner (Liverpool), B. I. Cohen (Sheffield), the Officers and Committees of the local Shechita Board, the Rev. Dr. A. Cohen (Birmingham), the Officers and Committees of the Manchester Shechita Board, Mr. Ellis Isaacs, M.B.E. (Glasgow Shechita Board) Officers of the Birmingham Shechita Board, representatives of the R.S.P.C.A., London and Liverpool, Mr. A. D. Harper, Manager of the Liverpool City Markets, Alderman T. McLellan (Birkenhead) and Harry Walker (Liverpool), representing the Slaughtermen's Union, representatives of the Mersey Docks and Harbour Board, Colonel L'Estrange Malone, M.P., Captain C. W. Hume, M.C., B.Sc., the Secretary of the Hobday Commission, Mr. Simon Myers, Investigating Officer of the London Board of Shechita, and Mr. S. Landman.

"The Chairman of the Liverpool Markets Committee explained the object of the demonstration. The Shechita was carried out by Shochetim from London, Liverpool, Birkenhead and Manchester respectively. The casting by the Weinberg Pen was effected with remarkable speed, the average time recorded for the four animals passing through the Pen being 15 seconds. The demonstration created a very favourable impression of the utility and efficiency of the apparatus. The total number of animals which have passed through the Pen is now 461.

"The demonstration was arranged by the local Shechita Board and appreciation is due to the local Markets Committee for their courtesy in granting facilities for the demonstration and to Mr. A. D. Harper, Manager of the City Markets and his assistants for their help.

"Following the demonstration, Mr. A. D. Harper informed a Press representative that it was safe to say that the invention would be used in the new Liverpool Abattoir, seeing that the Jewish Authorities had given their approval. He said it seemed to eliminate a great deal of cruelty caused by the present method.

"Dr. A. A. Mussen, Medical Officer of Health, said it certainly was a big step in the direction of humane killing. Mr. F. J. Winchester, Secretary of the Liverpool R.S.P.C.A., also expressed his approval of the casting pen. The cattle for the demonstration were provided by Mr. I. Rabinowitz, and every help was given by the slaughtermen in his service."

In Parliament.

The following questions and answers were recorded in the House of Commons recently :—

Foot-and-Mouth Disease.

Rear-Admiral Beamish asked the Minister of Agriculture what is the present position regarding the recent outbreak of foot-and-mouth disease in Sussex; if any cause can be assigned to the outbreak; and what animals were destroyed and at what cost to the State?

Dr. Addison: An outbreak of foot-and-mouth disease was confirmed on January 18th at Stanmer, in the parish of West Meston, East Sussex. No further outbreaks of disease occurred in that locality and the general restrictions imposed were completely removed on February 9th. The origin of the case is obscure. Fifty-two cattle, 97 sheep and 102 swine were slaughtered by the Ministry at a cost in compensation of £1,488 1s.

. . . . . .

Calmette Treatment.

Mr. Freeman asked the Minister of Health whether the investigations into the cause of the deaths of 67 children at Lübeck early in 1930 following the Calmette treatment of the Pasteur Institute are yet completed; and, if so, can he obtain a report on the matter?

Miss Lawrence: My right hon. Friend understands that an official report has been made to the German Imperial Health Council concerning these deaths. The council concluded that the deaths were not traceable to the original B.C.G. cultures, but were probably due to some unexplained admixture with virulent tubercle bacilli. The Imperial Council have also confirmed their decision of 1927 that the use of living bacilli, even in an attenuated form, for human prophylaxis is undesirable in the present state of knowledge.

. . . . . .

Cattle Industry (Scrub Bulls).

Mr. Brooke asked the Secretary of State for Scotland whether he proposes to introduce legislation this Session to deal with the scrub bull, in order to put our cattle industry in a better position in view of the anti-scrub bull legislation in some competing countries?

Mr. W. Adamson: I would refer my hon. Friend to the provisions of the Improvement of Live Stock (Licensing of Bulls) Bill which has now passed the Committee stage in another place. This Bill is applicable to Scotland.

Sir Nicholas Gratton-Doyle: As Ireland has now succeeded in eliminating the scrub bull, cannot Scotland do the same thing?

Mr. Adamson: That is exactly what we are proposing to do.

Mr. Macpherson: Can the right hon. Gentleman say whether the Government propose to give facilities for this Bill?

Mr. Adamson: In reply to the right hon. Gentleman, of course the Government will do what they can to pass the Bill.

. . . . . .

Poultry-Rearing, Sussex (Foxes).

Mr. Ede asked the Minister of Agriculture what action he proposes to take on the petition sent to him and him to obtain powers to prevent the turning out of foxes in poultry-rearing districts, and to enable poultry breeders to obtain adequate restitution for loss inflicted on them by the depredations of foxes?

Dr. Addison: As my hon. Friend is aware, I have already communicated with the Joint Standing Committee to the National Poultry Council and Masters of Foxhounds Association upon this subject, and have been informed that the matter will be investigated at once. I propose to send the Joint Committee a copy of the petition mentioned by my hon. Friend, and will consider the whole question further when the results of my communications with the Committee are available.

Mr. Ede: Will my right hon. Friend make arrangements, so that the foxes shall not eat any more chickens, while this investigation is proceeding?

Successful R.C.V.S. Prosecution.

Ipswich Man Fined at Felixstowe.

"At Felixstowe Police Court yesterday, before Mr. H. T. Horner and Captain Hardwick Woods," says the *East Anglian Daily Times* of February 17th, "Thomas J. Sketchley, 32, Lattice Avenue, Ipswich, was summoned for acting as a veterinary surgeon without a certificate, on December 15th. He pleaded not guilty.

"Mr. S. J. Gooding prosecuted for the Royal College of Veterinary Surgeons, and Mr. Voysey (Messrs. Harold Warnes and Co., Eye) conducted the case.

"Mr. Gooding said he had authority to prosecute, and that Sketchley's name did not appear on the register of the College.

"Mr. John Cordle, a printer, of Felixstowe, said that on November 10th Sketchley came to him and said that he was a late veterinary surgeon to the "U.D." London, that he was setting up in the town, and that he wanted some handbills printed. Witness drew up a sketch of the bills, showed it to Sketchley, and did the printing.

"The Chairman: What does 'U.D.' mean?

"Sketchley: The United Dairy Company.

"Mr. Henry Gort, haulage contractor, said that early in November Sketchley asked him if he would let him have an office on his premises in St. Andrew's Road, Felixstowe, for veterinary work. 'I asked him if he was a veterinary surgeon,' added witness, 'and he said he was.'

"Miss German, milliner, Felixstowe, said that on December 15th she took a dog to Sketchley, and she asked him if he was a fully-qualified veterinary surgeon, and he said that he was, and that he had qualified in America. 'We do not learn so much Latin there, but I think we have more practical experience,' he said.

"Sketchley said that he had practised in America for three years. After leaving the Army he took over the whole of the veterinary work from the Manor Farm Dairy, later the United Dairy Company. He did all the *post-mortems* and the work for the Lister Institute. He was with the company for twelve years. On a sign outside his office he displayed the words, 'Late Veterinary Inspector, U.D., London.' The Royal College of Veterinary Surgeons wrote asking that the words should be removed from the sign, and he instructed the signwriter to make the alteration, but he delayed doing so. Sketchley said he had been out of work and had gone to Ipswich because it was in an agricultural district. He had been nearly faced with starvation, and at the moment he had only 10s. in the world. He closed the business in January.

"The Magistrates convicted, but Mr. Horner said that in view of the circumstances they would impose a fine of only 40s. Fourteen days were granted in which to pay."

Origin of Human Races.

Professor J. B. S. Haldane and Types of Blood.

Professor J. B. S. Haldane, in a lecture at the Royal Institution, discussed the origin of man. He said it now seemed probable that humanity began in four different places, and each race was distinct from the others. The study of blood transfusion had proved that all the people of the world were divided into four blood groups. Although every country had people of each group, the types were quite distinct, and not affected by environment. The study of these blood groups enabled modern peoples to be divided on very broad lines according to their origin. This evidence shed an entirely new light on the migration of peoples, and tended to discount generally accepted theories of anthropology. He also believed that the origin of cultivation occurred independently in different places. One was probably in Egypt, and another somewhere between Afghanistan and the Punjab.

Notes and News.

Diary of Events.

March 2nd.—N.V.M.A. Committee Meeting, at 2 Verulam Buildings, Gray's Inn, W.C.1 :—Editorial, 4.30 p.m.

March 5th.—Annual Meeting of the Lancashire Division, N.V.M.A., at Manchester.

March 5th.—Meeting of the Central Division, N.V.M.A., at 10 Red Lion Square, W.C.1.

March 6th.—Meeting of the South-Eastern Division, N.V.M.A., at 10 Red Lion Square, W.C.1. Annual Dinner at the Holborn Restaurant.

March 7th.—Annual Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

Mar. 13th.—Yorkshire Division, N.V.M.A.; Dinner-dance at Leeds.

Aug. 22nd-28th.—N.V.M.A. Congress at Norwich.

. . . . .

Will.—Mr. Ernest Mathews, of Elmodesham House, Amersham, Vice-President of the Royal Agricultural Society, Vice-President and Hon. Treasurer of the Royal Veterinary College, Vice-President of the Royal Academy of Music, left £46,120—net personalty £42,718.

. . . . .

Dr. H. H. Curson, F.R.C.V.S., D.V.M., research officer in the Department of Veterinary Services, who accompanied Dr. Carpenter, the English scientist, to Ngamiland to study blook-sucking insects and the diseases carried by them, will return to Onderstepoort Laboratory, Pretoria, at the end of February. It is understood that Dr. Curson has been offered the post of Director of Veterinary Services for Portuguese East Africa, but nothing will be fixed until after his return to the Union.

R.C.V.S. Obituary.

Hobson, Harry Leonard, Albion House Hotel, Albion Place, Northampton. Graduated London, July 13th, 1922; died February 21st, 1931, aged 31 years.

. . . . .

Shepherd, Richard, 64 Weelock Street, Middlewich, Cheshire. Graduated London, May 11th, 1893; died February 17th, 1931; aged 60 years.

Army Veterinary Service.

London Gazette—War Office—Regular Army.

February 17th.—The following are restored to the establishment :—Major M. A. Murphy (January 30th); Captain A P. Macdonald (February 4th).

Territorial Army.

February 20th.—Major (Bt. Lt.-Col) J. S. Bowden, O.B.E., T.D., vacates the appointment of D.A.D.V.S. of a Division (September 1st, 1930).

Movements of Officers.

Majors G. Williamson and H. D. Lewis sailed for India on February 12th, for a full tour of duty abroad.

Major J. J. M. Soutar, O.B.E., was posted to the Scottish Command on February 16th, and is now doing duty at Edinburgh.

Captain E. O'Kelly was posted to the Northern Command on February 16th, and is now doing duty at Newcastle-on-Tyne.

Captain L. H. B. Poer, M.C., whose leave ex. India expires on February 20th, has been posted to the Southern Command for duty with effect from that date.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication

The Editor does not hold himself responsible for the opinions of his correspondents.

R.C.V.S. Diploma Curriculum and Examinations.

To the Editor of the Veterinary Record.

Sir,—May I ask the privilege of giving expression through your columns to a criticism of the proposed five-year curriculum and examinations leading up to Membership of the Royal College of Veterinary Surgeons.

In the first place, it is worthy of note that the scheme, as outlined in the *Veterinary Record* of February 7th, did not receive unanimous approval either in Council or in Committee. I submit, therefore, with respect, that the wisdom of Council in accepting and adopting a report or part of a report from a committee appointed to deal with a matter which involves a radical change is open to question, if that committee is not unanimous or very nearly so. In this case it is reported that the second part of the report was passed by the Special Committee by one vote only. That the subject " Parasitology " is an important one there can be no doubt, but I am confirmed in the opinion that the added prominence which it receives in this scheme, and especially the institution of a separate " table " of examiners for " Parasitology " alone, is out of proportion to its importance to practitioners in this country. For the purpose of the qualifying diploma " Parasitology " could be divided with advantage between " Zoology " (description of types), and " Medicine " (diseases of parasitic origin). A further study of the animal parasites, insects, and mites, as required for Colonial and other appointments, is provided by the post-graduate courses which have now been made obligatory by a number of appointing bodies.

In the first year, under " Botany " I consider that plants useful and poisonous to animals could be dealt with purely in their botanical aspect, and as mentioned above, types of parasites in " Zoology." This would add a veterinary interest to these subjects.

I think that experience has proved that it is a mistaken plan to hold a substantial course of instruction for a year, and to withhold the examination in it until the end of the following year. During the first year the subject tends to become secondary and receive scant attention from students, and during the second year, when the subject is being further elaborated, it is found that the ground work is not there. I consider, therefore, that there should be an examination in " Anatomy " at the end of the second year. " Junior Anatomy " (as it was until a short time ago), with " Histology " would not illogically constitute a " table " of two examiners.

The third year would be sufficiently occupied with " Anatomy " and " Animal Husbandry, Part 2," the latter including General Hygiene, Veterinary Hygiene, Dietetics, Meat and Milk Production, and Genetics.

I consider that it is premature to study " Therapeutics " at this stage.

In the fourth year I would add " Protozoology " to the sub-divisions of " Pathology," because of its nature, and having regard to the laboratory equipment required. The addition of " Pharmacology," " Therapeutics," " Pharmacy " and " Toxicology," and an introduction to " Medicine " and " Surgery " (to include clinical methods, with lectures and practical work, and anæsthetics) would make this a full year.

The terms " Principles and Practice " should at least be given the oblivion they deserved years ago. The terms " Veterinary Medicine " and " Veterinary Surgery " are surely self-explanatory without such embellishment.

" Veterinary Parasitology " cannot rationally be excluded from " Veterinary Medicine," and " Veterinary Jurisprudence " is much more a part of " Veterinary Medicine " than it is of " Veterinary Surgery." The term " Pathological Shoeing " is a misnomer.

In order to make my criticism constructive, and to avoid the accusation of picking out portions of the scheme in which I am particularly interested without reference to the whole, I have appended my views for the five year course and examinations :—

First Year.—*Teaching.*—1. Botany (including plants useful to and plants poisonous to animals). 2. Zoology (including parasitic types). 3. Chemistry (inorganic and organic). 4. Physics (including heat, light, and electricity). 5. Animal Husbandry, Part 1 (Animal Management and Shoeing of Normal Foot).

Examination.—1. Biology. 2. Chemistry and Physics. 3. Animal Husbandry, Part 1.

Second Year.—*Teaching.*—1. Anatomy (Osteology, Arthrology). 2. Histology, Embryology. 3. Physiology, Biochemistry.

Examination.—1. Anatomy, Histology, Embryology. 2. Physiology, Biochemistry.

Third Year.—*Teaching.*—1. Anatomy. 2. Animal Husbandry, Part 2 (Hygiene, Dietetics, Production of Milk and Meat, Genetics).

Examination.—1. Anatomy. 2. Animal Husbandry, Part 2.

Fourth Year.—*Teaching.*—1. Pathology (macroscopic and microscopic, Bacteriology, Mycology, Protozoology). 2. Pharmacology, Therapeutics, Toxicology, Pharmacy. 3. Clinical Medicine and Surgery.

Examination.—1. Pathology, Bacteriology, Mycology, Protozoology. 2. Pharmacology, Therapeutics, Toxicology, Pharmacy.

Fifth Year.—*Teaching.*—1. Veterinary Medicine (Meat Inspection, Milk Inspection, Parasitology, Jurisprudence). 2. Veterinary Surgery (General, Surgical and Applied Anatomy, Operative Surgery, Surgical Shoeing, Obstetrics). 3. Clinical Medicine and Surgery.

Examination.—1. Veterinary Medicine (including the above subjects). 2. Veterinary Surgery.

In regard to the examinations, I consider that the task of the examiners has been rendered more difficult by the proposed institution of " rejected " and " referred " groups. It will often be difficult to decide into which of these groups a candidate should be placed. Therefore it seems that at the General Examination it will frequently devolve on the internal examiner to use his influence in order to place a candidate, who has not shown up well, in the " referred " group if he thinks it is justified. The case will be a different one in the special examinations which are to be held at one " centre," as there will then presumably be no internal examiner. Again, the " referred " student, after taking the subject in which he was not successful in the General Examination, at the subsequent Special Examination, may find himself deprived of what he has already gained; *e.g.*, he has passed in A and B, but has been " referred " in C. He now takes C alone at the Special Examination and is " rejected " (he cannot be " referred "). His position is that he has failed in A, B and C—a truly Gilbertian one.

Yours faithfully,

R. Isherwood.

School of Veterinary Science,
University of Liverpool.
February 23rd, 1931.

Teaching of Jurisprudence to Veterinary Students.

To the Editor of the Veterinary Record.

Sir,—I should be grateful if you would allow me a small amount of space in which to correct what is evidently a misapprehension on the part of the writer of the Editorial in the current issue of the *Record*. The writer is obviously under the impression that the teaching of Jurisprudence to veterinary students is of recent introduction. This is erroneous, inasmuch as during each of *the last ten years* a Member of the Scottish Bar has given a special course of instruction on this subject to the students of this College, and an examination has been held at the end of each course. In this connection it may not be entirely irrelevant to point out that, while the R.C.V.S.—quite rightly—determines the scope and standard of instruction to be given in subjects included in the curriculum, such scope and standard is a *minimum*; and it is inconceivable that any teaching institution rests content to be thus restricted.

Public utterances by those not actually conversant with veterinary educational progress are all too apt to convey the impression that the Colleges lack initiative, and wait for guidance, or even compulsion by the Council of the R.C.V.S. It is questionable whether editorial comment, giving support to the impression, and liable to be read by the general public, is likely to serve the best interests of the profession.

It is no uncommon thing for professions, as well as persons, to be taken at their own valuation.

I am,

Yours faithfully,

R. G. Linton.

Department of Hygiene,
Royal (Dick) Veterinary College,
Edinburgh.
February 23rd, 1931.

Bacteriology of Bovine Pneumonia.

To the Editor of the Veterinary Record.

Sir,—Professor Gaiger starts his paper with the heading " Bovine Pneumonia. Is it identical with Hæmorrhagic Septicæmia (Barbone)"? May I go one better by asking two equally amusing questions, *viz.*, " Streptococcal Pneumonia. Is it identical with Streptococcal Septicæmia "? and again " A Staphylococcal Abscess in the Neck. Is it identical with a Staphylococcal Septicæmia "?

The answer to all three is the same and so obvious that I am at a loss to know why he proceeded further.

As, however, he has elaborated this heading to great length I must perforce criticise his further remarks.

Professor Gaiger implies in the title of his paper that there is only one kind of bovine pneumonia. This I deny. Firstly, there is a tuberculous variety and, as Mr. Tweed and I showed in our paper, there are at least two other varieties which appear in this country; one was studied in detail and the other form is still being investigated. He also implies that we stated that the particular type of bovine pneumonia we studied was hæmorrhagic septicæmia. He must have failed to appreciate the title of our paper, *viz.*, " Pneumonia of Bovines Due to *Pasteurella boviseptica*."

His contrasting statements are absolutely useless as they merely show that, on the one hand, he is dealing with a very virulent strain of *P. boviseptica* (often a type 3) in an animal of low resistance, whilst, on the other hand, the animal has had a higher resisting power and the organism (in this case a *P. boviseptica*, type 1) has been of low virulence.

We notice Professor Gaiger carefully omits the experiments on calves in which, after giving a calf an intravenous dose of *P. boviseptica* (type 1) recently isolated from the pneumonic lung of a cow, that calf died within 36 hours from a septicæmia due to the injected organism, and at autopsy showed numerous small hæmorrhages scattered throughout the subcutaneous tissues.

In short, in very severe cases of the disease the Pasteurella organisms are found in the blood stream, whilst in the milder forms they are localised in some organ. The former is a Pasteurella septicæmia whilst the latter is a Pasteurella pneumonia or enteritis, etc., as the case may be.

There are many analogies in the realm of Pathology, *e.g.*, in infections due to streptococci, staphylococci, pneumococci, etc.

If Professor Gaiger still denies this expression of orthodox bacteriological opinion, then further argument is superflous.

For those who have not read the paper written by Mr. Tweed and myself, may I state that in this disease we isolated the causal organism from the lungs of every case studied and in most cases in pure culture. This organism was proved to be identical morphologically, biochemically, and antigenically with a strain of *P. boviseptica* (type 1),

kindly sent to me by Dr. Jones of the Rockefeller Institute, Princeton, U.S.A. The organism was also inoculated into a calf which died from a septicæmia due to the injected organism, thus conforming entirely with the requirements of Koch's postulates.

Professor Gaiger's remarks about antiserum treatment are entirely unconvincing. What proof has he that the antiserum was prepared from a *P. boviseptica* (type 1)? I think he will find that most of the antiserum on the market has been made from a *P. boviseptica* (type 3). There is no proof that it is efficacious in a type 1 infection.

Might I suggest to Professor Gaiger that he prepares some type 1 antiserum, and tries it in this particular variety of bovine pneumonia.

Yours faithfully,

J. W. Edington.

The University, Sheffield.
February 17th, 1931.

The Practitioner and Public Health Legislation.

To the Editor of the Veterinary Record.

Sir,—I should like to make quite clear for Mr. Elphick my statement that the "Veterinary practitioner may take samples and carry out tests if he does not suspect any of the scheduled diseases."

The Animals (Notification of Disease) Order of 1919, Section 2, states: "A veterinary surgeon or veterinary practitioner who in his private practice is employed to examine any head of cattle or any sheep, goat, swine, horse, ass, mule, dog or cat or the carcass of any such animal and is of the opinion that the animal is diseased or was diseased when it died or was slaughtered or suspects the existence of disease therein shall with all practicable speed give notice of the existence or suspected existence of disease to an inspector of the Local Authority . . ."

Throughout the Orders it also mentions that veterinary surgeons are required to give notice of the existence or suspected existence of such disease to the Local Authority.

If a practitioner examines an animal for a client, the law does not say he must not carry out tests, and there is no reason why he should not do so on behalf of his client.

If the practitioner suspects that the disease is present, he should inform his client of his suspicions and point out the client's obligation to report and also report on his own behalf.

In regard to Section 3 (2) of the Anthrax Order, 1928, mentioned by Mr. Elphick, this gives power to the practitioner to take samples from dead animals and puts this Order on a par with the others. The Anthrax Order of 1910 allowed the practitioner to take samples of blood in any cases in which neither the history of the case nor any external lesions in the carcass indicate the existence of anthrax. This proviso gave rise to great doubt in the mind of the practitioner as to whether he was in order in taking a blood sample at all.

The examination of blood samples by practitioners on behalf of the owner does not necessarily mean that the practitioner suspects anthrax but rather that he will be in a position to advise his client to report to the Local Authority or that he need not report if there is no suspicion of anthrax.

With the arrangement I mentioned between the practitioner and the Local Authority Veterinary Officer benefit is derived by all concerned.

Yours faithfully,

William Tweed.

Veterinary Department,
Town Hall,
Sheffield.
February 17th, 1931.

The Editor acknowledges the receipt of the following:—

Report of the Annual General Meeting of the Veterinary Medical Association of Ireland, from Professor J. J. O'Connor, Hon. Secretary.

Report of a meeting of the North of Scotland Division, N.V.M.A., from Mr. J. McAllan, Hon. Secretary. Report of a meeting of the Southern Counties Division, N.V.M.A., from Mr. John Facer, Hon. Secretary.

Communications from Principal J. F. Craig (Dublin), Messrs. D. C. Phillips (Royal Veterinary College, London), W. Lyle Stewart (Armstrong College), K. J. Urquhart (London), and W. Jackson Young (Newcastle-on-Tyne).

Diseases of Animals Acts, 1894 to 1927.

SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic Mange.§		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1 to 15 Feb., 1931	21	27	—	—	7	12	20	58	37
Corresponding period in—									
1930 ...	27	27	—	—	20	32	45	124	24
1929 ...	15	15	7	97	22	44	51	63	44
1928 ...	27	28	17	1,896	21	44	51	69	30
Total 1 Jan. to 15 Feb., 1931	67	75	2	255	29	55	95	166	56
Corresponding period in—									
1930 ...	70	74	—	—	62	99	182	329	121
1929 ...	63	73	15	993	64	121	209	159	70
1928 ...	77	85	70	6,316	79	144	190	213	104